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Die Bedeutung des Selbstwertgefühls für die Entstehung und Aufrechterhaltung von Verfolgungswahn

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Inhaltsverzeichnis

Zusammenfassung

Verfolgungsideen sind ein häufiges Symptom psychotischer Störungen. Psychologische Erklärungsmodelle betonen neben Auffälligkeiten in Attributions- und Entscheidungsprozessen die Relevanz eines erniedrigten Selbstwertgefühls für die Entstehung von Verfolgungswahn (Freeman, Garety, Kuipers, Fowler, & Bebbington, 2002). Auch eine Vielzahl von Studien spricht dafür, dass Patienten mit Verfolgungsideen unter großen Selbstwerteinbußen leiden (Freeman, 2007). In der Folge beinhalten kognitiv-behaviorale Therapien für Patienten mit Schizophrenie auch Interventionen zur Selbstwertsteigerung (Fowler, Garety, & Kuipers, 1995; Moritz, Vitzthum, Randjbar, Veckenstedt, & Woodward, 2010).

Dennoch ist die spezifische Rolle des Selbstwertgefühls bei der Entstehung und Aufrechterhaltung von Verfolgungsideen bislang nicht vollständig geklärt. Insbesondere bestehen bezüglich des expliziten und impliziten Selbstwerts sowie bezüglich der Bedeutung von Selbstwertschwankungen im Entstehungsprozess paranoider Gedanken noch offene Fragen. Ziel dieser Dissertation ist es deshalb, diese Aspekte des Selbstwerts bei Menschen mit Verfolgungsideen differenziert zu untersuchen. Ein tieferes Verständnis des komplexen Zusammenhangs zwischen dem Selbstwertgefühl und Verfolgungsideen könnte insbesondere hilfreich sein, um weitere spezifische psychologische Interventionen für Patienten mit Wahn zu entwickeln.

In Artikel 1 konnte bestätigt werden, dass Patienten mit akuten und remittierten Verfolgungsideen im Vergleich zu gesunden Probanden ein erniedrigtes explizites Selbstwertgefühl aufweisen, während sich keine Gruppenunterschiede im impliziten Selbstwertgefühl fanden. Innerhalb der Patientengruppe unterschieden sich der explizite und der implizite Selbstwert jedoch nicht.

Artikel 2 gab Aufschluss über die Rolle des Selbstwertgefühls im Entstehungsprozess paranoider Gedanken. In einer nichtklinischen Stichprobe führte sozialer Stress bei vulnerablen Personen zu einem Anstieg paranoider Gedanken und dieser Prozess wurde durch eine Reduktion im Selbstwert mediiert.

In Artikel 3 wurde die Bedeutung des Selbstwertgefühls und der Selbstschemata für Verfolgungsideen anhand des aktuellen Forschungsstandes im Rahmen eines Reviews untersucht. Hierbei erwies es sich als gut belegt, dass Menschen mit klinisch relevanten und subklinischen Verfolgungsideen durch ein erniedrigtes explizites Selbstwertgefühl und

negative Selbstschemata charakterisiert sind. Zusätzlich gibt es wenige Studien mit jedoch einheitlichen Ergebnissen, die dafür sprechen, dass Patienten, die ihre Verfolgung als berechtigt wahrnehmen, einen erniedrigten Selbstwert haben und dass der Selbstwert bei Menschen mit Verfolgungsideen instabil ist.

Insgesamt weisen die Ergebnisse dieser Dissertation somit darauf hin, dass ein global erniedrigtes explizites Selbstwertgefühl, negative Selbstschemata und eine momentane Reduktion im Selbstwertgefühl für die Entstehung und Aufrechterhaltung paranoider Gedanken von Bedeutung sind. Die Befunde werden abschließend in ein Erklärungsmodell integriert, das die Rolle des Selbstwertgefühls bei der Entstehung von Verfolgungsideen beschreibt und dabei frühere negative Lebensereignisse als eine mögliche Ursache für die Entstehung negativer Selbstschemata berücksichtigt. Die Ergebnisse dieser Dissertation untermauern schließlich die Notwendigkeit, in der Therapie von Patienten mit Wahn spezifische Interventionen zur Selbstwertsteigerung und -stabilisierung einzusetzen.

Abstract

Persecutory delusions are a prevalent symptom in psychotic disorders. In addition to attribution and reasoning biases, psychological models emphasize the relevance of low self-esteem for the formation of persecutory delusions (Freeman et al., 2002). Also, a number of studies speak for the notion that patients with persecutory delusions suffer from feelings of inferiority (Freeman, 2007). As a consequence, cognitive-behavioral therapy programs for patients with schizophrenia include interventions that aim at improving self-esteem (Fowler et al., 1995; Moritz, Vitzthum, et al., 2010).

However, the specific role of self-esteem in the formation and maintenance of persecutory delusions is not clarified yet. In particular, there are still outstanding questions concerning the levels of explicit and implicit self-esteem in patients with persecutory delusions and concerning the role of fluctuations in self-esteem in the formation of paranoid beliefs. Therefore, the aim of the present dissertation project is to investigate these aspects of self-esteem in persons with persecutory delusions. A deeper understanding of the complex relation between self-esteem and persecutory delusions could be helpful in developing specific psychological interventions for patients with delusions.

Paper 1 demonstrated that patients with acute and remitted persecutory delusions have low levels of explicit self-esteem compared to healthy individuals. However, there were no group differences in levels of implicit self-esteem. Also, there were no differences between levels of explicit and implicit self-esteem within the patient sample.

Paper 2 provided information about the role of self-esteem in the formation of paranoid beliefs. In a nonclinical sample, social stress led to an increase of paranoid ideation in individuals with high vulnerability. This process was further mediated by a reduction in self-esteem.

The study of paper 3 investigated the relevance of self-esteem and self-schema to persecutory delusions by reviewing the existing research in this field. There was sufficient evidence that persons with clinically relevant or subclinical persecutory beliefs are characterized by low global self-esteem and negative self-schemas. In addition, there was consistent evidence from a small number of studies that patients who believe that their persecution is deserved have low self-esteem and that self-esteem is instable in patients with persecutory delusions.

Overall, the findings of the present dissertation project indicate that low global explicit self-esteem, negative self-schemas and an acute reduction in self-esteem are relevant factors

for the formation and maintenance of persecutory beliefs. These results are integrated into an explanatory model, which describes the role of self-esteem in the formation of persecutory delusions and considers previous adverse experiences as a potential cause of impaired self-esteem. Finally, the findings of the present dissertation project stress the need for specific interventions that aim at improving and stabilizing the patients´ self-esteem.

1. Theoretischer Hintergrund

1.1 Verfolgungswahn

1.1.1 Begriffserklärung

Wahnphänomene werden nach dem DSM-IV definiert als „falsche Überzeugungen, die gewöhnlich mit einer Fehldeutung von Wahrnehmungen und Erfahrungen einhergehen“ (S. 345, Saß, Wittchen, Zaudig, & Houben, 2003). Anhand der inhaltlichen Themen des Wahns lassen sich verschiedene Wahnarten benennen, wie Verfolgungswahn, Größenwahn, Beziehungswahn und körperbezogener Wahn, wobei Verfolgungsideen am häufigsten auftreten (Saß et al., 2003). Wahn kann anhand der weit akzeptierten Definition von Freeman und Garety (2000) als Verfolgungswahn klassifiziert werden, wenn eine Person glaubt, dass a) ihr Schaden zustößt oder zustoßen wird und dass b) der Verfolger die Absicht hat, dieser Person zu schaden. Verfolgungsideen werden zudem als „threat beliefs“ bezeichnet (S. 332, Freeman et al., 2002), also als Überzeugung, in Gefahr zu sein. Durch diese Bezeichnung werden bereits die mit den Verfolgungsideen häufig einhergehenden Ängste deutlich.

Wahnphänomene - auch mit paranoiden Inhalten - sind vorrangig Symptome schizophrener Störungen (Kapitel 1.1.2), sie können jedoch auch in weniger ausgeprägter Form bei Personen aus der Allgemeinbevölkerung vorkommen (Kapitel 1.1.3). Zusätzlich können wahnhafte Gedanken im Rahmen anderer psychischer Erkrankungen wie Persönlichkeitsstörungen, insbesondere der paranoiden Persönlichkeitsstörung, Depressionen, bipolaren Störungen und Demenz auftreten, bestimmen hier jedoch nicht vorrangig das Störungsbild beziehungsweise sind geringer ausgeprägt als bei Störungen des schizophrenen Formenkreises.

1.1.2 Verfolgungswahn im Rahmen schizophrener Störungen

Wahnphänomene treten bei 90% der an Schizophrenie Erkrankten auf (Leucht, Fritze, Lanczik, Vauth, & Olbrich, 2012), wobei Verfolgungsideen, wie dargestellt, am häufigsten auftreten (Saß et al., 2003). Schizophrenie ist eine psychische Störung mit sehr heterogenen Symptomen. Neben (Verfolgungs-) Wahn zählen Halluzinationen zu den positiven Symptomen, da sie „zusätzlich“ zum normalen Erleben auftreten können, während Negativsymptome wie Sprachverarmung, abgeflachter Affekt und Antriebsarmut durch Defizite oder eine Reduktion im Erleben charakterisiert sind (Häfner, 2005). Die paranoide

Schizophrenie ist gekennzeichnet durch vorherrschende (meist paranoide) Wahnphänomene und Halluzinationen und tritt am häufigsten auf (ICD, Dilling, Mombour, & Schmidt, 2000). Dagegen stehen beim hebephrenen Typus affektive Veränderungen (unpassende und flache Stimmung) und Denkzerfahrenheit sowie beim katatonen Typus psychomotorische Störungen (Erregung vs. Stupor) im Vordergrund, während bei beiden Erkrankungsformen zusätzlich paranoide Symptome auftreten können (Dilling et al., 2000).

Während des Verlaufs der Schizophrenie treten Verfolgungsideen und andere positive Symptome primär in der akuten Phase auf, der zumeist eine Prodromalphase mit unspezifischen und negativen Symptomen sowie Leistungseinbußen vorausgeht (Leucht et al., 2012). Nach Rückgang der akuten Positivsymptomatik folgt meist eine postakute Phase mit Antriebslosigkeit, Affektverflachung und Rückzug (Lincoln, 2006). Der Verlauf der Schizophrenie kann episodisch oder kontinuierlich sein (Dilling et al., 2000), wobei auch ca. 20% der Patienten nach der ersten Episode remittieren (Häfner, 2005). In Bezug auf die Häufigkeit des Auftretens einer Schizophrenie kann von einer Punktzeitprävalenz von 0,5% ausgegangen werden (McGrath, Saha, Chant, & Welham, 2008).

Verfolgungswahn kann außerdem ein Symptom anderer psychotischer Störungen, insbesondere der wahnhaften Störung, aber auch der schizoaffektiven Störung darstellen, wobei beide Störungen jedoch seltener auftreten als schizophrene Störungen (Saß et al., 2003). Zur Klärung der Ätiologie werden neben biologischen (v.a. die Genetik und Neurotransmitter betreffend) und psychosozialen Faktoren (Leucht et al., 2012) zunehmend kognitive und emotionale Mechanismen als relevante Faktoren für die Entstehung psychotischer Symptome untersucht, worauf in Kapitel 1.1.5 eingegangen wird.

1.1.3 Verfolgungsideen in der Normalbevölkerung

„Many people have a few paranoid thoughts, and a few people have many" (S. 329, Freeman et al., 2011).

Während Wahnphänomene im DSM IV-TR als falsche Überzeugungen definiert werden (Saß et al., 2003) und dadurch eine qualitative Unterscheidung zu den Gedanken gesunder Menschen angedeutet wird, wird in der Kontinuumshypothese davon ausgegangen, dass es psychotische Symptome in unterschiedlich starker Ausprägung gibt, die sich entlang eines Kontinuums ansiedeln können (Chapman & Chapman, 1980; Claridge, 1994; Peters, Day, McKenna, & Orbach, 1999). Diese Hypothese lässt die Schlussfolgerung zu, dass leichte psychotische Symptome auch bei Personen der Normalbevölkerung auftreten können.

So konnten verschiedene Studien sowohl wahnhafte Gedanken im Allgemeinen (Freeman, 2006) als auch leichte Verfolgungsideen im Speziellen (Freeman, 2007) bei Menschen aus der Allgemeinbevölkerung nachweisen. Beispielsweise gaben 20% der Befragten aus einer Stichprobe der Allgemeinbevölkerung an, dass sie im letzten Jahr das Gefühl hatten, andere seien gegen sie (Johns et al., 2004). Auch für einen enger umfassten Zeitraum fanden sich positive Ergebnisse: in einer selektierten Stichprobe mit Studenten gaben 30% der Befragen an, dass sie glaubten, im letzten Monat habe jemand bewusst versucht, sie zu ärgern, 5% der Befragten glaubten, dass die Möglichkeit bestehe, dass eine Verschwörung gegen sie im Gange sei (Freeman et al., 2005). Das insgesamt hohe Auftreten von Wahngedanken in der Normalbevölkerung wirft die Frage auf, ob es dennoch Unterschiede im Erleben der Gedanken im Vergleich zu Patienten gibt. Diesbezüglich konnte gezeigt werden, dass Patienten und Zugehörige einer bestimmten religiösen Bewegung sich nicht in der Anzahl ihrer Wahngedanken unterscheiden, die Patienten sich aber durch die Wahngedanken stärker belastet fühlten als die Personen der religiösen Gruppe (Peters et al., 1999). Auch in einer weiteren Untersuchung erwies sich die mit den Wahngedanken verbundene Belastung als ein aufschlussreicher Faktor, um zwischen Patienten und gesunden Personen zu diskriminieren (Lincoln, 2007).

Insgesamt erscheint es somit aufschlussreich, (paranoide) Wahnphänomene auch in subklinischen Stichproben zu untersuchen, um Hinweise auf die Entstehung der Symptomatik zu erhalten. Die Verwendung nichtklinischer Stichproben erscheint vorteilhaft, da kognitive Prozesse unabhängig von möglichen Nebenwirkungen antipsychotischer Medikamente oder zusätzlichen Symptomen im Rahmen psychotischer Störungen (beispielsweise Denkstörungen, Verlangsamung) untersucht werden können.

1.1.4 Stress und Verfolgungsideen

Im weit verbreiteten Vulnerabilitäts-Stress-Modell (Zubin & Spring, 1977) wird postuliert, dass Stress beim Überschreiten einer gewissen Schwelle bei vulnerablen Personen (genetische Veranlagung, Neigung zu Symptomen etc.) zur Ausprägung psychischer Symptome führen kann. Unter anderem konnte dieses Modell durch Ergebnisse einer Experience-Sampling-Studie untermauert werden, in der Menschen mit einer erhöhten Vulnerabilität (Patienten > Verwandte > gesunde Kontrollprobanden) unter Stress verstärktes psychotisches Erleben zeigten (Myin-Germeys, Delespaul, & van Os, 2005). Auf die Bedeutung von Stress für die

Entstehung paranoider Gedanken im Speziellen weisen experimentelle Studien (z.B. Lincoln, Lange, Burau, Exner, & Moritz, 2010; Lincoln, Peter, Schäfer, & Moritz, 2008) hin, die einen Anstieg von subklinischen paranoiden Gedanken unter Stress bei vulnerablen Personen fanden.

Erste Hinweise dafür, dass insbesondere sozialer Stress für vulnerable Personen relevant ist, zeigte eine Untersuchung, die auf das Zusammenwirken von Genen und sozialem Stress bei der Entstehung psychotischer Symptome hindeutet (van Winkel, Stefanis, & Myin-Germeys, 2008). Zusätzlich stellen Diskriminierung (Janssen et al., 2003), negative Erfahrungen in der Kindheit (Varese et al., 2012) und ein Migrationshintergrund (Cantor-Graae & Selten, 2005; McGrath et al., 2008) soziale Risikofaktoren und somit möglicherweise auch Stressoren für die Entwicklung psychotischer Symptome dar.

Schließlich scheint das Erleben von sozialem Stress bei Patienten mit Schizophrenie mit einem höheren und länger andauerndem Ausmaß an Belastung im Vergleich zu gesunden Personen einherzugehen (Perry, Henry, Sethi, & Grisham, 2011), wobei Stress in dieser Untersuchung (lediglich) durch den Ausschluss aus der Gruppe während eines virtuellen Ballspiels induziert wurde. Somit scheint Stress - und sozialer Stress im Speziellen - ein bedeutsamer Faktor für die Entstehung paranoider Gedanken und psychotischer Symptome im Allgemeinen darzustellen und kann möglicherweise die Remission der Symptomatik aufgrund der mit Stress assoziierten Belastung erschweren.

1.1.5 Kognitive und emotionale Faktoren bei der Entstehung von Verfolgungswahn

Für positive Symptome im Allgemeinen (Garety, Kuipers, Fowler, Freeman, & Bebbington, 2001) und für Verfolgungsideen im Speziellen (Freeman et al., 2002) wurden Erklärungsmodelle entwickelt, die die Beteiligung kognitiver und emotionaler Prozesse bei der Entstehung und Aufrechterhaltung der Symptomatik betonen. In Anlehnung an das Vulnerabilitäts-Stress-Modell wird im Modell zur Entstehung von Verfolgungsideen (Abb. 1, Freeman et al., 2002) davon ausgegangen, dass stressbesetzte Ereignisse bei vulnerablen Personen zu Erregung, ungewöhnlichen Erfahrungen (wie Wahrnehmung der eigenen Gedanken als Stimme), emotionaler Belastung und kognitiven Verzerrungen (s.u.) führen können. In der Folge würde der Betroffene nach einer Bedeutung für seinen inneren Zustand und die externen stressbesetzten Ereignisse suchen. Bei der Suche nach einer Bedeutung würden bestehende negative Gedanken über sich selbst (z.B. schwach), andere und die Welt

(z.B. feindlich und bedrohlich) einbezogen. Freeman et al. (2002) gehen weiter davon aus, dass die Auseinandersetzung mit diesen negativen Kognitionen mit erhöhter Angst einhergeht, was wiederum die Entstehung paranoider Ideen begünstigen kann. Die Auswahl einer Erklärung für das Erlebte sei zusätzlich von sozialen Faktoren (z.B. Isolation), der Einsicht in die Erkrankung und einer reduzierten gedanklichen Flexibilität abhängig.

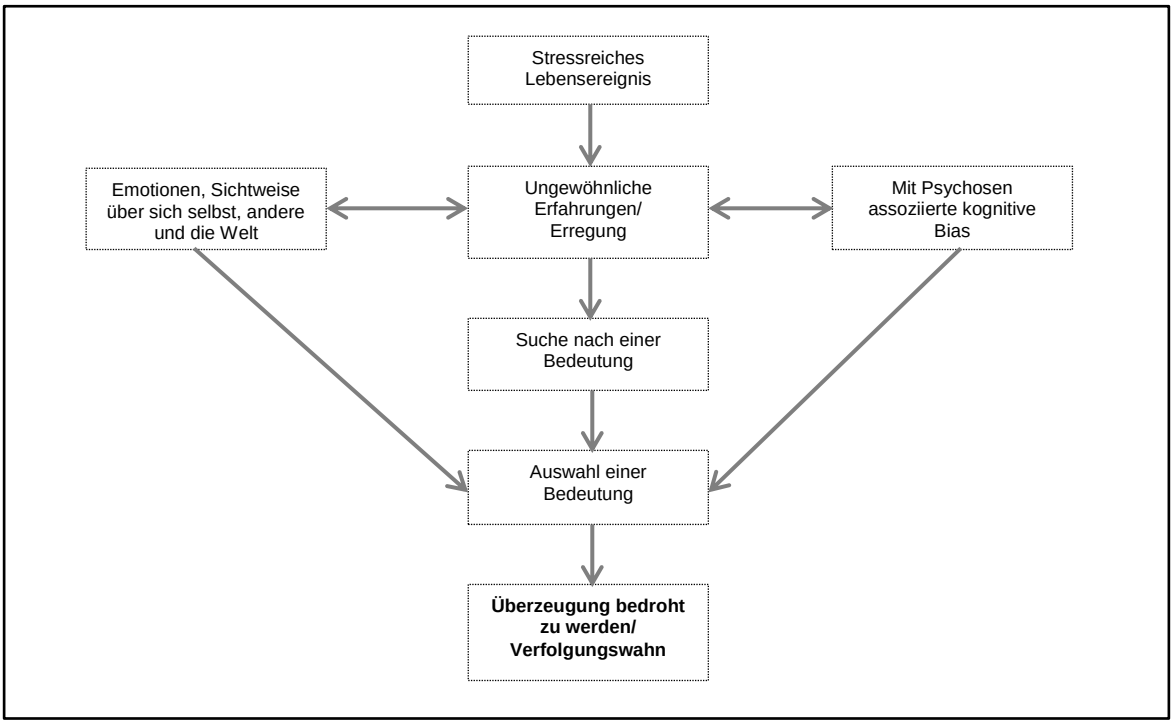

Abb. 1: Kognitives Modell zur Entstehung von Verfolgungswahn nach Freeman et al. (2002)

Im Folgenden werden die einzelnen kognitiven und emotionalen Faktoren, die als mögliche Ursachen für die Entstehung von Verfolgungsideen untersucht wurden, zusammenfassend dargestellt.

Voreiliges Schlussfolgern

Huq, Garety und Hemsley (1988) untersuchten erstmals das Entscheidungsverhalten von Menschen mit wahnhaften Gedanken und fanden, dass Patienten im Vergleich zu gesunden Probanden weniger Informationen einholen, bevor sie eine Entscheidung treffen. Dieses voreilige Entscheidungsverhalten wurde im Folgenden als „Jumping to Conclusions"-Bias beschrieben (Garety & Freeman, 1999). Das klassische Paradigma zur Untersuchung des „Jumping to Conclusions"-Bias ist die sogenannte „beads task" (Huq et al., 1988). Durch eine Vielzahl von Studien konnten Belege für voreiliges Schlussfolgern bei Menschen mit Wahngedanken im Vergleich zu gesunden Personen gefunden werden (Fine, Gardner,

Craigie, & Gold, 2007; Ziegler, Rief, & Lincoln, 2009). Auch Menschen mit Verfolgungsideen zeigen den „Jumping to Conclusions"-Bias (Merrin, Kinderman, & Bentall, 2007; Startup, Freeman, & Garety, 2008). Dagegen ist die Tendenz zu voreiligen Schlussfolgerungen im Zusammenhang mit subklinischen wahnhaften Ideen nicht ausreichend belegt (Ziegler et al., 2009). Diesbezüglich scheint eine Studie von Moritz, Van Quaquebeke und Lincoln (in press) an Personen aus der Allgemeinbevölkerung aufschlussreich, in der voreilige Schlussfolgerungen mit psychopathologischen Facetten von Paranoia („psychotic paranoia"), nicht jedoch mit unspezifischem Misstrauen („unspecific suspiciousness") assoziiert war.

Theory of Mind

Inzwischen gibt es ausreichend Hinweise darauf, dass Menschen mit Schizophrenie durch Defizite in der „Theory of Mind" (ToM) Fähigkeit charakterisiert sind und somit Schwierigkeiten haben, die Gedanken und Intentionen anderer zu schlussfolgern (Lee, Farrow, Spence, & Woodruff, 2004). Eine verminderte ToM-Fähigkeit wurde insbesondere bei Patienten mit negativen Symptomen nachgewiesen (Brüne, 2005). Es gibt jedoch auch eine Anzahl von Studien, die diese Defizite bei Menschen mit Verfolgungsideen nachwiesen (Freeman, 2007). Auch eine Studie aus der eigenen Arbeitsgruppe zeigte, dass Patienten mit akuten Verfolgungsideen im Vergleich zu gesunden Probanden schlechter die Absichten und Gefühle anderer schlussfolgern können (Mehl, Rief, Lüllmann, Ziegler, Kesting, et al., 2010). In dieser Studie erwiesen sich die Defizite in der Fähigkeit, die Intentionen anderer zu erkennen, zwar spezifisch für Positiv-Symptome und Wahn, nicht jedoch für Verfolgungswahn im Speziellen. Somit kann eine reduzierte ToM-Fähigkeit eher als ein Faktor zur Entstehung von Wahngedanken im Allgemeinen (Verfolgungsideen inbegriffen) angesehen werden.

Attributionsstile

In dem Modell von Bentall, Kinderman und Kaney (1994) wird davon ausgegangen, dass Menschen mit Wahngedanken durch einen defensiven Attributionsstil charakterisiert sind und dass sie ihren Selbstwert schützen, indem sie negative Ereignisse external attribuieren. Diese Theorie wird durch Studien gestützt, die zeigen konnten, dass Patienten mit Wahn positive Ereignisse eher internal und negative Ereignisse external attribuierten (Candido & Romney, 1990; Kaney & Bentall, 1989). Zudem gibt es Hinweise darauf, dass Patienten mit

Verfolgungsideen negative Ereignisse eher auf andere Personen (external personal) attribuieren und sie somit für das Geschehen beschuldigen, während gesunde Menschen negative Ereignisse eher der Situation oder den Umständen (external situational) zuschreiben (Kinderman & Bentall, 1997). Mittlerweile sind jedoch Studien erschienen, die weder den externalen Attributionsstil (Moritz, Woodward, Burlon, Braus, & Andresen, 2007) noch den external-personalen Attributionsstil für negative Ereignisse (Mehl, Rief, Lüllmann, Ziegler, Müller, et al., 2010; Merrin et al., 2007) bei Patienten mit Verfolgungswahn replizieren konnten und die somit den externalen Attributionsstil als charakteristischen kognitiven Bias bei Patienten mit Verfolgungswahn in Frage stellen.

Selbstwertgefühl

Es wurden verschiedene kognitive Theorien entwickelt, die alle die Relevanz eines erniedrigten Selbstwertgefühls bei Patienten mit Verfolgungsideen postulieren, dabei jedoch unterschiedliche Aspekte und Funktionen des Selbstwertgefühls betonen. Auf die einzelnen Theorien wird in Kapitel 1.2 eingegangen, während der aktuelle Forschungsstand zu den Theorien in Artikel 3 (Review) systematisch dargestellt und analysiert wird.

Emotionen und Emotionsregulation

Im kognitiven Modell schreiben Freeman et al. (2002) Emotionen und insbesondere Angst eine bedeutende Rolle für die Entstehung von Verfolgungswahn zu. Im Einklang damit fanden Myin-Germeys und Kollegen (2001), dass Personen mit Psychosen im Vergleich zu gesunden Probanden unter Stress stärkere emotionale Reaktionen zeigen, was auf eine erhöhte Stresssensitivität dieser Patientengruppe hinweist. Zudem erwies sich Angst als der bedeutsamste emotionale Prädiktor für subklinische paranoide Ideen in stressreichen (Lincoln et al., 2008) und neutralen Situationen (Freeman et al., 2008). Des weiteren kann die direkte Induktion von Angst bei vulnerablen Personen zu einem Anstieg paranoider Gedanken führen (Lincoln, Lange, et al., 2010). Auch im klinischen Bereich wird die Relevanz von Emotionen für Verfolgungsideen deutlich. So zeigte eine Experience-Sampling-Studie, dass paranoide Phasen mit einem erhöhten Angst- und Ärgerlevel und mit einem geringeren Selbstwert assoziiert waren und dass ein erhöhtes Ausmaß an Angst und ein kurzfristig reduzierter Selbstwert den Beginn paranoider Gedanken vorhersagen können (Thewissen et al., 2011).

Mögliche Erklärungen für die bedeutende Rolle der Emotionen im Zusammenhang mit Verfolgungsideen geben Studien zur Emotionsregulation, die zeigten, dass eine Neigung zu

wahnhaften Ideen mit Schwierigkeiten in der Emotionsregulation einhergeht (Westermann & Lincoln, 2011). Insbesondere die Neubewertung einer Situation unter Stress stellt für vulnerable Menschen eine Schwierigkeit dar, sodass eine dysfunktionale Neubewertung in paranoide Interpretationen münden könnte (Westermann, Kesting, & Lincoln, 2012).

Die Berücksichtigung dieser kognitiven und emotionalen Faktoren für die Entstehung psychotischer Symptome führte in den letzten Jahrzehnten dazu, dass kognitiv-behaviorale Interventionen für Menschen mit Schizophrenie adaptiert wurden (Fowler et al., 1995; Lincoln, 2006). Diese Interventionen erwiesen sich mit kleinen bis mittleren Effektstärken als anteilig effektiv (Wykes, Steel, Everitt, & Tarrier, 2008) und wurden von den Patienten als hilfreich empfunden wurden (Lincoln et al., 2012). Die weitere Untersuchung kognitiv-emotionaler Faktoren kann neben einem verbesserten Störungsverständnis somit aufschlussreich sein, um kognitiv-behaviorale Interventionen für Menschen mit Wahnideen zu erweitern und gezielt einzusetzen.

1.2. Das Selbstwertgefühl bei Menschen mit Verfolgungswahn

1.2.1 Definition und Überblick

Das Selbstwertgefühl wird als eine positive oder negative Einstellung gegenüber sich selbst definiert (Rosenberg, 1965). Das Selbstwertgefühl stellt somit eine (Be-) Wertung des Selbst dar, wie es auch in der Definition von Baumeister et al. beschrieben wird: „By self-esteem we mean simply a favorable global evaluation of oneself“ (S. 5, Baumeister, Smart, & Boden, 1996). Andere Autoren betonen dagegen zwei unterschiedliche Aspekte des Selbstwerts, nämlich kompetent (competence) und wertvoll (worthiness) zu sein (Mruk, 2006). Im Zusammenhang mit der Ausprägung des Selbstwertgefühls werden oftmals auch Selbstschemata thematisiert. Selbstschemata stellen „kognitive Verallgemeinerungen über das Selbst dar, die von vergangenen Erfahrungen herrühren und die Verarbeitung auf sich selbst bezogener Informationen im sozialen Erleben organisieren und leiten“ (S. 64, Markus, 1977). In dieser Definition wird die Prägung des Individuums durch vergangene Erfahrungen hervorgehoben, die sich auf die Bewertung aktueller Situationen auswirkt.

Ein vermindertes Selbstwertgefühl wurde bei unterschiedlichen psychischen Störungen und sozialen Problemen gefunden (Mann, Hosman, Schaalma, & de Vries, 2004). Auch Menschen mit Schizophrenie zeigen ein erniedrigtes Selbstwertgefühl oder stark

ausgeprägte negative Selbstschemata (Barrowclough et al., 2003; Moritz, Veckenstedt, Randjbar, et al., 2010). Da die Symptome der Schizophrenie zum Teil sehr heterogen sind, wurde zur Untersuchung der Ätiologie der Schizophrenie ein symptomspezifischer Ansatz vorgeschlagen (Bentall, Jackson, & Pilgrim, 1988). Dementsprechend sind symptomspezifische kognitive Theorien vor allem in Bezug auf die Positivsymptomatik entstanden (siehe Kapitel. 1.1.5). Das Selbstwertgefühl ist dabei insbesondere als bedeutender Faktor für die Entstehung von Verfolgungsideen postuliert worden.

Im Folgenden werden die für Verfolgungsideen relevanten Aspekte des Selbstwertgefühls genauer thematisiert. Hierbei werden die Theorien zum expliziten und impliziten Selbstwert, zu spezifischen negativen Selbstschemata, zum Selbstwertgefühl im Zusammenhang mit „Poor me"- und „Bad me"-Paranoia sowie zur Instabilität des Selbstwerts vorgestellt. Es wird lediglich ein Einblick in den aktuellen Forschungsstand in Bezug auf die jeweiligen Theorien gegeben, da Artikel 3 im Rahmen eines Reviews den aktuellen Forschungsstand systematisch zusammenfasst und analysiert.

1.2.2 Expliziter und impliziter Selbstwert

In der Theorie von Bentall (1994) wird davon ausgegangen, dass Menschen mit Verfolgungswahn unterbewusste negative Selbstkonzepte haben und der Wahn dazu dient, die Aktivierung negativer Selbstkonzepte zu verhindern. Auf dem Hintergrund der vermuteten selbstwertschützenden Funktion des Wahns wurde postuliert, dass Patienten mit Verfolgungsideen ein normales oder sogar erhöhtes explizites Selbstwertgefühl haben, während ihr implizites Selbstwertgefühl erniedrigt ist (Bentall, 1994; Kinderman, 1994). Eine Diskrepanz zwischen der Messung des Selbstwerts mittels expliziter (offener) und impliziter (verdeckter) Verfahren könnte demzufolge als ein Nachweis der defensiven Funktion von Verfolgungsideen angesehen werden (Bentall, Corcoran, Howard, Blackwood, & Kinderman, 2001). Bentall und Kollegen stützen ihre Theorie auf die Hypothese von Zigler & Glick (1988), dass Paranoia eine Art „getarnte Depression" sei bzw. dass die Entwicklung von Verfolgungsideen eine potentielle Depression abwehren könne, sowie auf die Sichtweise von Colby, Faught und Parkinson (1979), dass Verfolgungsideen schambesetzte Gefühle reduzieren könnten, indem eigene Unzulänglichkeiten bei anderen gesucht würden.

Die Betrachtung des expliziten und impliziten Selbstwertgefühls bei Patienten mit Verfolgungsideen ist eng verknüpft mit Theorien zur Selbstdiskrepanz sowie zu

Attributionsprozessen. In der Selbstdiskrepanztheorie von Higgins (1987) wird davon ausgegangen, dass Diskrepanzen zwischen gewissen Selbstrepräsentationen mit negativen Emotionen einhergehen. Dabei stellt ein Bereich des Selbst (das aktuelle Selbst, das ideale Selbst und das Sollte-Selbst) in Kombination mit einer Sichtweise des Selbst (eigene Sichtweise, vermutete Sichtweise anderer) jeweils eine Selbstrepräsentation dar. Bentall et al. (1994) stellten die Hypothese auf, dass selbstwertbedrohliche Ereignisse bei Patienten mit Verfolgungsideen zu einer Diskrepanz zwischen der Sichtweise, wie eine Person sich aktuell wahrnimmt (das aktuelle-Selbst) und der Sichtweise, wie sie idealerweise gern wäre (das ideales Selbst) führen können. In der Folge würden die Patienten die für sie bedrohlichen Ereignisse external attribuieren und somit andere für ihr eigenes Versagen beschuldigen. Dadurch verringern sie die Diskrepanz zwischen dem aktuellen und dem idealen Selbst. Die Vermutung, dass andere schlechte Absichten gegen die eigene Person hegen, begünstigt jedoch die Entstehung einer Diskrepanz zwischen der eigenen Sichtweise und der vermuteten Sichtweise anderer (also wie die Patienten glauben, von anderen wahrgenommen zu werden). Dieses verstärke wiederum den externalen Attributionsstil. Das anschließend entwickelte Attributions-Selbstrepräsentation-Modell (Bentall et al., 2001) betont den dynamischen und wechselseitigen Prozess zwischen Attributionen und Selbst-Repäsentationen sowie deren Einfluss auf paranoide Ideen und die Stimmung.

Insbesondere die Theorie zur selbstwertschützenden Funktion von Verfolgungsideen (Bentall, 1994), sowie unten dargestellte Theorien haben zu einem regen Forschungsinteresse geführt. Die Mehrzahl der Studien untersuchte hierbei das explizite Selbstwertgefühl und die Ergebnisse deuten insgesamt auf ein erniedrigtes explizites Selbstwertgefühl bei Menschen mit Verfolgungsideen hin (Freeman, 2007). Es gibt jedoch auch gegenteilige Befunde (z.B. Fornells-Ambrojo & Garety, 2009; Lyon, Kaney, & Bentall, 1994), die dazu führten, dass die Theorie eines normalen bis erhöhten Selbstwerts bei Patienten mit Wahn aufrechterhalten bzw. weiter diskutiert wurde. Dagegen haben nur wenige Studien den impliziten Selbstwert bei Menschen mit Verfolgungsideen untersucht. Hierbei konnten zwei Studien an jedoch eher kleinen Stichproben einen erniedrigten impliziten Selbstwert bei Patienten im Vergleich zu gesunden Probanden nachweisen (z.B. McKay, Langdon, & Coltheart, 2007). Eine Studie an einer größeren Stichprobe mit jedoch einem weniger validen impliziten Verfahren fand dagegen keine entsprechenden Gruppenunterschiede (Vázquez, Diez-Alegría, Hernández-Lloreda, & Moreno, 2008). Der von Bentall et al. (2001) geforderte direkte Vergleich des expliziten und impliziten Selbstwertgefühls zur Überprüfung der selbstwertschützenden Funktion von Verfolgungsideen erfolgte bisher in nur einer Studie, die keine Diskrepanz

zwischen explizitem und implizitem Selbstwert bei Patienten mit Verfolgungsideen nachweisen konnte (Vázquez et al., 2008).

Insgesamt ist somit bislang nicht vollständig geklärt, ob Menschen mit Verfolgungsideen ein erniedrigtes explizites Selbstwertgefühl aufweisen. Zudem ist unklar, ob sie durch ein erniedrigtes implizites Selbstwertgefühl und dennoch durch eine Diskrepanz zwischen explizitem und implizitem Selbstwert (höherer expliziter als impliziter Selbstwert) charakterisiert sind. Folglich kann die Theorie der selbstwertschützenden Funktion des Wahns aufgrund der bisherigen Studienlage weder belegt noch verworfen werden.

1.2.3 Negative und spezifische Selbstschemata

Wie dargestellt, gehen Freeman et al. (2002) davon aus, dass negative Einstellungen über die eigene Person, über andere und über die Umwelt die Entstehung paranoider Ideen begünstigen können. Sie schreiben somit dem Verfolgungswahn keine selbstwertschützende Funktion zu. Vielmehr postulieren sie, dass die paranoiden Ideen mit bestehenden negativen Selbstschemata im Einklang sind und die Gefühle der Person direkt widerspiegeln.

In Anlehnung an das Modell von Freeman et al. (2002) gehen verschiedene Forschergruppen davon aus, dass spezifische Aspekte des Selbstwertgefühls bei Menschen mit Verfolgungswahn beeinträchtigt sind (Fowler et al., 2006; Lincoln, Mehl, et al., 2010; Rector, 2004): Insbesondere wurden die Theorien aufgestellt, dass Menschen mit Verfolgungsideen spezifische negative Selbstschemata (z.B. ich bin schwach, böse, ein Versager), dysfunktionale Selbstkonzepte in Bezug auf interpersonelle Beziehungen (z.B. Unterlegenheit im Vergleich zu anderen) und dysfunktionale Selbstkonzepte in Bezug auf die wahrgenommene Akzeptanz durch andere (Wertlosigkeit, wenn man sich von anderen nicht akzeptiert fühlt) aufweisen. Somit werden von letztgenannten Autoren eher spezifische Defizite im Selbstwertgefühl als ein global erniedrigtes Selbstwertgefühl im Zusammenhang mit Verfolgungsideen betont.

Um negative sowie positive Selbst- und Fremdschemata differenziert zu erfassen, wurde die Brief Core Schema Scale entwickelt (BCSS, Fowler et al., 2006). Mithilfe der BCSS wurden bei Patienten mit Verfolgungswahn (MacKinnon, Newman-Taylor, & Stopa, 2011) ausgeprägte negative Selbstschemata gefunden, während positive Selbstschemata dagegen eher nicht beeinträchtigt waren. Eine Studie aus der eigenen Arbeitsgruppe weist auf

die Relevanz interpersoneller Selbstschemata bei Menschen Psychosen hin (Lincoln, Mehl, et al., 2010): Patienten, deren Selbstkonzept von der Akzeptanz anderer abhängt, hatten stärker ausgeprägte Verfolgungsideen, wenn sie gleichzeitig auch negative interpersonelle Selbstkonzepte hatten (z.B. sich von der eigenen Familie ungeliebt fühlen). Die Untersuchung spezifischer Selbstschemata scheint somit neben der Untersuchung des globalen Selbstwerts vielversprechend, um das Verständnis zu erweitern, inwiefern sich Selbstkonzepte im Inhalt der Verfolgungsideen widerspiegeln.

1.2.4 Das Selbstwertgefühl im Zusammenhang mit „Poor Me"- und „Bad Me"-Paranoia

Chadwick und Trower (1995) postulieren, dass es zwei verschiedene Arten von Verfolgungswahn gibt, die sich auch in Bezug auf die Sichtweise der eigenen Person unterscheiden: Patienten des „Bad Me"-Paranoia-Typus glauben, sie hätten ihre Verfolgung verdient und sie geschehe als eine Art Strafe zu Recht, weshalb dieser Typus durch einen niedrigen Selbstwert und Unterlegenheitsgefühle charakterisiert sei. Beim „Poor Me"-Paranoia-Typus sehe der Patient sich als Opfer einer unberechtigten Verfolgung, weshalb sein Selbstwert normal bis erhöht sei.

Obwohl oben genannte Theorie bereits seit fast zwei Jahrzehnten besteht, wurde das Selbstwertgefühl im Zusammenhang mit „Poor Me"- vs. „Bad Me"-Paranoia in nur wenigen Studien untersucht. Diese sprechen jedoch dafür, dass Patienten des „Bad Me"-Paranoia-Typus ein niedrigeres Selbstwertgefühl haben als Patienten des „Poor Me"-Paranoia-Typus (z.B. Freeman, Garety, & Kuipers, 2001).

1.2.5 Die Instabilität des Selbstwerts

Zusätzlich entstand in den letzten Jahren die Hypothese, dass die Instabilität des Selbstwertgefühls einen bedeutenden Faktor für die Entstehung von Verfolgungsideen darstellt (Bentall et al., 2001; Kesting, Bredenpohl, Klenke, Westermann, & Lincoln, 2013; Thewissen, Bentall, Lecomte, Van Os, & Myin-Germeys, 2008; Udachina et al., 2009). Erstmals haben Bentall et al. (2001) die These aufgestellt, dass die Selbstrepräsentation bei Menschen mit paranoiden Gedanken instabil seien, wodurch sie die inkonsistente

Ergebnislage zum Selbstwertgefühl bei Menschen mit Verfolgungsideen erklärten. Schwankungen im Selbstwert könnten demnach widerspiegeln, inwieweit es Menschen mit Verfolgungswahn gelinge, die Aktivierung negativer Selbstschemata durch externale Attributionen zu verhindern. Auch Ergebnisse aus Studien der Sozialpsychologie weisen darauf hin, dass Menschen mit einem instabilem Selbstwert negative Ereignisse im Alltag selbstwertbedrohlicher wahrnehmen als Menschen mit einem stabilen Selbstwert (Greenier et al., 1999) und dass Schwankungen im Selbstwert mit einem stärkeren Erleben von Ärger und Feindseligkeit einhergehen (Kernis, Grannemann, & Barclay, 1989).

Diese bis kürzlich noch unerforschte Hypothese zur Instabilität des Selbstwerts konnte nun durch Studien untermauert werden, die zeigten, dass das Ausmaß an Selbstwertschwankungen mit einer höheren Ausprägung paranoider Ideen assoziiert ist (z.B. Thewissen et al., 2007). Weiterhin sprechen Ergebnisse aus derselben Arbeitsgruppe dafür, dass eine kurzfristiger Reduktion des Selbstwerts einem momentanen Anstieg an Verfolgungsideen vorrausgeht (Thewissen et al., 2008). Dagegen ist bislang unklar, wodurch Selbstwertschwankungen entstehen könnten und welche Rolle ihnen bei der Entstehung paranoider Gedanken zukommt.

1.3 Fazit und offene Fragen

Insgesamt betonen alle oben dargestellten Theorien die Bedeutung eines reduzierten Selbstwertgefühls für Verfolgungswahn. Während Bentall et al. (2001) die Selbstwerteinbußen im impliziten Selbstwert und in der Diskrepanz zwischen explizitem und implizitem Selbstwert verdeutlicht sehen, betonen Freeman et al. (2002), dass die Selbstwerteinbußen direkt und anhand spezifischer negativer Selbstschemata ersichtlich sind. Dagegen sehen Trower und Chadwick (1995) Selbstwerteinbußen nur bei einer bestimmten Gruppe von Menschen mit Verfolgungsideen, wogegen verschiedene Autoren (z.B. Thewissen et al., 2008) davon ausgehen, dass Selbstwertschwankungen für die Entstehung von Verfolgungsideen relevant sind.

Wie in Kapitel 1.2.2 dargestellt, ist bislang nicht einheitlich geklärt, ob Patienten mit Verfolgungswahn ein erniedrigtes explizites Selbstwertgefühl aufweisen. Ein normales (unbeeinträchtigtes) explizites Selbstwertgefühl bei Menschen mit Verfolgungsideen wird trotz einer großen Anzahl an Studien, die für ein niedriges Selbstwertgefühl sprechen, weiter

diskutiert. Aufgrund der wenigen bisher veröffentlichten Studien mit inkonsistenten Ergebnissen zum impliziten Selbstwert und zur Explizit-Implizit-Diskrepanz ist bislang unklar, ob ein erniedrigter impliziter Selbstwert und die Diskrepanz generell für Verfolgungsideen relevant sind und ob dem Verfolgungswahn möglicherweise eine selbstwertschützende Funktion zukommt. Somit ergibt sich Frage 1:

Haben Patienten mit Verfolgungswahn ein erniedrigtes explizites Selbstwertgefühl und ein erniedrigtes implizites Selbstwertgefühl? Besteht bei Patienten mit Verfolgungswahn dennoch eine Diskrepanz zwischen dem expliziten und dem impliziten Selbstwert, bei der der explizite Selbstwert höher ausfällt als der implizite?

Des Weiteren hat die Theorie zur Instabilität des Selbstwerts die Erforschung der Entstehungsprozesse von Verfolgungsideen vorangetrieben. Dabei scheint insbesondere das Ergebnis einer Experience-Sampling-Studie aufschlussreich, dass einer kurzfristigen Reduktion im Selbstwertgefühl ein direkter Anstieg momentaner paranoider Gedanken folgte (Thewissen et al., 2008). Wie in Kapitel 1.1.4 dargestellt, existieren außerdem Belege dafür, dass sozialer Stress die Entstehung von Wahnsymptomen begünstigt. Hinzu kommt, dass sozialer Stress auch das Selbstwertgefühl beeinflussen kann. So konnte eine Studie an Menschen mit Psychosen zeigen, dass das Stresserleben in Form von Stigmatisierung, mit einer Verminderung des Selbstwertgefühls einhergeht (Lysaker, Tsai, Yanos, & Roe, 2008).

Somit erscheint es möglich, dass sich Stress indirekt über Veränderungen im Selbstwertgefühl auf Verfolgungsideen auswirkt. Auch die Befunde aus zwei Querschnittstudien sprechen dafür, dass ein vermindertes Selbstwertgefühl (Barrowclough et al., 2003) bzw. negative Selbst- und Fremd-Schemata (Stowkowy & Addington, 2012) die Entstehung von Positivsymptomen unter sozialem Stress mediieren. Obwohl aus diesen Querschnittstudien keine kausalen Zusammenhänge abgeleitet werden können und keine direkte Übertragbarkeit der Ergebnisse von Positivsymptomen im Allgemeinen auf Verfolgungsideen erfolgen sollte, scheint eine mediierende Rolle des Selbstwertgefühls insbesondere bei der Entstehung paranoider Gedanken dennoch naheliegend. Dabei könnten Stressoren negative Selbst-Schemata aktivieren. Die zweideutige bedrohliche Situation könnte im Einklang mit negativen Selbst- und Fremdschemata gedeutet werden und dadurch in eine paranoide Interpretation münden. Die Befunde zur Stresssensitivität von Menschen mit erhöhter Vulnerabilität (siehe Kapitel 1.1.4 und 1.1.5) sprechen außerdem dafür, dass die

Vulnerabilität ein Moderator des Effekts von Stress auf paranoide Gedanken darstellen kann. Somit ergibt sich Frage 2:

Wird der Einfluss von sozialem Stress auf das Ausmaß paranoider Gedanken durch eine Reduktion im Selbstwertgefühl mediiert und durch die Neigung zur Positivsymptomatik und zu paranoiden Gedanken moderiert?

Schließlich haben die in Kapitel 1.2.2 - 1.2.5 vorgestellten Theorien zur Ausprägung und Funktion des Selbstwertgefühls bei Menschen mit Verfolgungswahn zu einer Fülle klinischer und subklinischer Studien geführt. Dabei weist ein Übersichtsartikel auf einen erniedrigten expliziten Selbstwert bei Menschen mit Verfolgungsideen hin (Freeman, 2007). Die Ergebnisse zum impliziten Selbstwert und der Explizit-Implizit-Diskrepanz sind inkonsistent. Die Studienlage bezüglich der Theorien, dass spezifische Selbstschemata, die Differenzierung zwischen „Poor Me"- vs. „Bad Me"-Paranoia sowie die Instabilität des Selbstwerts für Verfolgungsideen relevant sind, wurde bislang nicht systematisch ausgewertet. Dieses erscheint jedoch aufgrund der wachsenden Anzahl neuerer Studien notwendig, um Aussagen darüber treffen zu können, welche Aspekte des Selbstwerts für Verfolgungsideen relevant sind und inwieweit sich die Theorien als haltbar erweisen. Zudem haben bisherige Übersichtsarbeiten bei der Auswertung der Studien selten die Ausprägung paranoider Ideen (akut vs. remittiert vs. subklinisch) berücksichtigt. Außerdem wurde das Selbstwertgefühl bei Patienten mit Wahn selten im Vergleich zu einer klinischen Stichprobe, wie beispielsweise Menschen mit Depressionen, analysiert. Dieses wäre jedoch sinnvoll, um das Selbstwertgefühl bei Menschen mit paranoiden Ideen differenziert zu untersuchen. Eine erneute und differenzierte Auswertung bisheriger Studien, die das Selbstwertgefühl bei Menschen mit Verfolgungsideen untersuchten, könnte somit dazu beitragen, das Verständnis der Rolle des Selbstwertgefühls bei der Entstehung und Aufrechterhaltung von Verfolgungsideen zu erweitern. Fragestellung 3 lautet somit wie folgt:

Welche Aspekte des Selbstwerts sind für die Entstehung von Verfolgungswahn relevant?/ Können die Theorien zum Selbstwertgefühl bei Menschen mit Verfolgungsideen durch bisher veröffentlichte Studien belegt werden? (Review)

2. Darstellung des Dissertationsvorhabens

2.1 Ziel der Dissertation

Zahlreiche Studien und unterschiedliche psychologische Theorien weisen darauf hin, dass ein erniedrigtes Selbstwertgefühl einen relevanten Faktor für die Entstehung von Verfolgungswahn darstellen kann (Kapitel 1.2). Wie in Kapitel 1.3 hergeleitet, ergeben sich dennoch eine Reihe offener Fragen. Diese sollen im Rahmen der vorliegenden Dissertation untersucht werden und lauten wie folgt:

1. Haben Patienten mit Verfolgungswahn ein erniedrigtes explizites Selbstwertgefühl und ein erniedrigtes implizites Selbstwertgefühl? Besteht bei Patienten mit Verfolgungswahn dennoch eine Diskrepanz zwischen dem expliziten und dem impliziten Selbstwert, bei der der explizite Selbstwert höher ausfällt als der implizite? (Artikel 1)
2. Wird der Einfluss von sozialem Stress auf das Ausmaß paranoider Gedanken durch eine Reduktion im Selbstwertgefühl mediiert und durch die Neigung zur Positivsymptomatik und zu paranoiden Gedanken moderiert? (Artikel 2)
3. Welche Aspekte des Selbstwerts sind für die Entstehung von Verfolgungswahn relevant?/ Können die Theorien zum Selbstwertgefühl bei Menschen mit Verfolgungsideen durch bisher veröffentlichte Studien belegt werden? (Artikel 3 - Review)

Die oben genannten Fragestellungen sind von Bedeutung, um spezifische Aussagen über die Rolle des Selbstwertgefühls bei der Entstehung von Verfolgungswahn treffen zu können. Ziel dieser Dissertation ist es, diesen Fragen nachzugehen, um das Störungsverständnis von Verfolgungsideen im Rahmen schizophrener Störungen zu erweitern. Dieses mag wiederum zu einer Verbesserung psychotherapeutischer Interventionen für Patienten mit Schizophrenie beitragen.

2.2 Beschreibung der Projekte

Artikel 1 wurde im Rahmen des DFG-Projekt „Entscheidungs- und Attributionsprozesse bei Patienten mit Wahnvorstellungen“ erstellt. Das DFG-Projekt wurde von Juli 2007 bis Dezember 2010 an der Philipps-Universität Marburg unter der Leitung von Prof. Dr. Tania Lincoln durchgeführt. Ziel des Projekts war es, kognitive Prozesse, die an der Entstehung und Aufrechterhaltung wahnhafter Ideen beteiligt sein können, systematisch zu untersuchen. Dazu wurden der „Jumping to Conclusions Bias“, Fähigkeiten der „Theory of Mind“ (ToM), der Attributionsstil, der explizite und implizite Selbstwert sowie die Ausprägung der psychotischen und allgemeinen Symptomatik erhoben. Die Stichprobe umfasste 81 ambulante und 56 stationäre Patienten mit einer Störung aus dem schizophrenen Formenkreis, 113 gesunde Kontrollprobanden sowie 29 Patienten mit Depressionen. Parallel wurde an der Philipps-Universität Marburg ein Forschungsprojekt zur Evaluation kognitiv-verhaltenstherapeutischer Interventionen bei Menschen mit psychotischen Störungen in einem Warte-Kontrollgruppendesign durchgeführt. Die Symptomatik und die kognitiven Variablen (s.o.) wurden bei diesen Patienten vor der Therapie, nach der Wartezeit (Wartegruppe), zu Therapieende sowie bei einer Einjahreskatamnese (nur Symptomatik) erhoben. In Artikel 1 dieser Dissertation wurde das Selbstwertgefühl als eine der kognitiv-emotionalen Variablen, die an der Entstehung von Verfolgungsideen beteiligt sein können, mithilfe eines expliziten und eines impliziten Verfahrens an einer Teilstichprobe von Patienten mit Verfolgungswahn, Patienten mit Depression und gesunde Kontrollprobanden untersucht.

In Artikel 2 wurde der Einfluss von sozialem Stress auf das Selbstwertgefühl und die Ausprägung paranoider Gedanken untersucht. Die Untersuchung wurde an einer Stichprobe aus der Allgemeinbevölkerung an der Philipps-Universität Marburg durchgeführt. Marcel Bredenpohl und Julia Klenke erhoben die Daten im Rahmen ihrer Diplomarbeiten von November 2009 bis Februar 2010. Die Daten wurden computergestützt mittels SoSci Survey (www. soscisurvey.de) erfasst.

Artikel 3 ist ein Review, das den aktuellen Forschungsstand zum Selbstwertgefühl bei Menschen mit Verfolgungsideen systematisch analysiert und anhand dessen die Theorien zum Zusammenhang von Selbstwertgefühl und Verfolgungswahn überprüft. Die Literatursuche erfolgte im März 2012 mittels PsycINFO und Ovid MEDLINE(R).

3. Zusammenfassung der Untersuchungen der Dissertation

Im Folgenden werden die Untersuchungen, die im Rahmen dieser Dissertation angefertigt wurden, zusammenfassend dargestellt. Die vollständigen Artikel finden sich im Anhang A-C.

3.1 Expliziter und impliziter Selbstwert und deren Diskrepanz bei Patienten mit Verfolgungswahn (Artikel 1)

Kesting, M.-L., Mehl, S., Rief, W., Lindenmeyer, J. & Lincoln, T.M. (2011). When paranoia fails to enhance self-esteem: Explicit and implicit self-esteem and its discrepancy in patients with persecutory delusions compared to depressed and healthy controls. *Psychiatry Research* 186, 197-202.

Einleitung: In einer der ersten Theorien zum Selbstwert von Patienten mit Verfolgungsideen wurde postuliert, dass Menschen mit Verfolgungsideen ihr Selbstwertgefühl schützen, indem sie andere Menschen für ihr Versagen beschuldigen (Bentall, 1994). Eine Diskrepanz zwischen dem expliziten und dem impliziten Selbstwert (erniedrigter impliziter, normaler bis erhöhter expliziter Selbstwert) könne deshalb als Hinweis auf eine defensive Funktion des Wahns angesehen werden (Bentall et al., 2001). Während bisherige Befunde auf einen erniedrigten expliziten Selbstwert bei Patienten mit Wahn hindeuten (z.B. Merrin et al., 2007), haben nur wenige Studien den impliziten Selbstwert und die Diskrepanz zwischen explizitem und implizitem Selbstwert untersucht und uneinheitliche Befunde erbracht. Deshalb wurden in dieser Studie der explizite und der implizite Selbstwert und deren Diskrepanz an einer großen Stichprobe untersucht.

Methode: Die Stichprobe (n = 139) umfasste 28 Patienten mit akutem Verfolgungswahn, 31 Patienten mit remittiertem Verfolgungswahn, 59 dazu nach Alter, Bildung und Geschlecht parallelisierte gesunde Kontrollprobanden sowie 21 Kontrollprobanden mit Depression. Die Ausprägung der schizophrenen Symptomatik wurde mittels der Positive and Negative Syndrome Scale (PANSS, Kay et al., 1987) erfasst. Anhand der Ausprägung des PANSS P6-Items „Verfolgungswahn“ erfolgte die Einteilung in akut wahnhafte (P6 $\geq$ 4) vs. remittierte Symptomatik (P6 < 4). Der Selbstwert wurde explizit über die Skala zum Selbstwertgefühl von Rosenberg (RSE; Collani & Herzberg, 2003) sowie implizit mit dem Impliziten Assoziationstest (IAT, Greenwald & Farnham, 2000; Greenwald et al., 1998) erhoben. Der IAT erfasst die Assoziationsstärke von selbst- und fremdbezogenen Konzepten zu positiven und negativen Adjektiven anhand von Reaktionszeiten. Der Proband erhält die Aufgabe, Wörter der richtigen von vier Kategorien (selbst, andere, gut, schlecht) zuzuordnen. Dabei

stehen in einem Durchgang die beiden zueinander kongruenten Kategorien (selbst-gut, andere-schlecht) auf jeweils einer Seite des Bildschirmes und teilen sich eine Taste. Im anderen Durchgang stehen die zueinander inkongruenten Kategorien (selbst-negativ, andere-gut) auf jeweils einer Seite und teilen sich eine Taste. Der „IAT-Effekt“ ergibt sich aus der Differenz zwischen der inkompatiblen und der kompatiblen Bedingung. Ein geringer IAT-Effekt und somit eine geringe Differenz zwischen den beiden Bedingungen weist dabei auf einen erniedrigten Selbstwert hin.

Ergebnisse: Eine einfaktorielle Varianzanalyse mit der Gruppe als unabhängige Variable und dem RSE-Summenwert als abhängige Variable zeigte, dass sich die Gruppen signifikant in der Ausprägung des expliziten Selbstwerts unterschieden (Brown Forthyse = 17.24; *df* = 3, 79.3, *P* < .001). Die gesunden Probanden wiesen dabei einen höheren Selbstwert auf als die akut wahnhaften, die remittierten und die depressiven Probanden (alle *P* < .001). Entgegen der Hypothese konnten mittels einer einfaktoriellen Varianzanalyse (UV: Gruppe, AV: impliziter Selbstwert) keine Gruppenunterschiede im impliziten Selbstwert gefunden werden (*F* = .98; *df* = 3, 138, *P* = 0.403). Um auszuschließen, dass die Erfassung des Selbstwertgefühls mittels IAT durch mögliche negative Fremdschemata (Fowler et al., 2006) beeinflusst wurde, wurde der IAT-Effekt zusätzlich lediglich für die Kategorien „selbst-positiv“ und „selbst-negativ“ berechnet. Hierbei fanden sich erneut keine Gruppenunterschiede. Um den expliziten und impliziten Selbstwert direkt miteinander zu vergleichen, wurden die Variablen durch z-Transformation standardisiert. Die ANOVA mit Gruppe und Messmethode (explizit/ implizit) als Faktoren auf den Selbstwert-z-Score zeigte einen Haupteffekt für die Gruppe (*F* = (3, 134) 11.27 *P* < 0.001), (wobei die gesunde Kontrollgruppe einen insgesamt höheren Selbstwert aufwies als die übrigen Gruppen), sowie einen Interaktionseffekt Gruppe × Messmethode (*F* (3, 134) = 7.72, *P* < 0.001). Es zeigte sich kein Effekt für den Faktor Messmethode (*F* (1, 134) = 2.95, *P* = 0.09). Anschließende gepaarte t-Tests zeigten, dass die gesunden Probanden einen höheren expliziten als impliziten Selbstwert aufwiesen (*P* = .001), während die Probanden mit Depressionen einen höheren impliziten als expliziten Selbstwert aufwiesen (*P* = 0.003). Entgegen der Hypothese unterschieden sich der explizite und implizite Selbstwert bei den Patienten mit akuten und remittierten Verfolgungsideen nicht (*P* = 0.274 bzw. *P* = 0.386).

Diskussion: Die Hypothese, dass Wahn eine selbstwertschützende Funktion hat, konnte durch die Ergebnisse dieser Untersuchung insgesamt nicht befürwortet werden. Zum einen ist der explizite Selbstwert bei Patienten mit akuten und remittierten Wahnideen geringer ausgeprägt als bei gesunden Probanden. Zum anderen ließen sich mittels impliziter Messung keine

verdeckten Selbstzweifel in der Patientengruppe nachweisen. Auch der direkte Vergleich von implizitem und explizitem Selbstwert konnte die vermutete Diskrepanz zwischen einem höheren expliziten als impliziten Selbstwert nicht stützen.

Insgesamt weisen die Ergebnisse jedoch darauf hin, dass Personen mit Verfolgungswahn vergleichbar mit Menschen mit Depressionen große Selbstwerteinbußen haben, die auch bestehen bleiben, nachdem wahnhafte Gedanken remittiert sind. Deshalb sollten gezielt Interventionen zur Selbstwertsteigerung in die kognitiv-behaviorale Therapie bei Patienten mit Wahn einbezogen werden.

3.2 Der Einfluss von sozialem Stress auf das Selbstwertgefühl und die Ausprägung paranoider Gedanken (Artikel 2)

Kesting, M.-L., **Bredenpohl, M., Klenke, J., Lincoln, T.M. (2013). The impact of social stress on self-esteem and paranoid ideation.** ***Journal of Behavior Therapy and Experimental Psychiatry*** **44, 122-128.**

Einleitung: In Vulnerabilität-Stress-Modellen wird postuliert, dass Stress bei vulnerablen Personen psychotische Symptome auslösen kann. Bisherige Studien belegen, dass sowohl Stress (Lincoln et al., 2008) als auch eine Reduktion des Selbstwertgefühls (Thewissen et al., 2008) dem Anstieg paranoider Gedanken vorangehen können. Eine Querschnittstudie fand zudem Hinweise darauf, dass einem verminderten Selbstwertgefühl eine mediierende Rolle bei der Entstehung von positiven Symptomen zukommt (Barrowclough et al., 2003). Bislang sind jedoch kausale Zusammenhänge zwischen sozialem Stress, Selbstwerteinbußen und Symptomen ungeklärt. Deshalb wird in dieser Studie der Einfluss von sozialem Stress auf paranoide Ideen mithilfe eines experimentellen Designs untersucht. Dabei wird eine kurzfristige Reduktion im Selbstwertgefühl als möglicher Mediator sowie die Neigung zur Positivsymptomatik und zu paranoiden Ideen im Speziellen als ein möglicher Moderator des Effektes von sozialem Stress auf paranoide Gedanken berücksichtigt.

Methode: Die Stichprobe umfasste 82 Personen aus der Normalbevölkerung. Die Probanden der Experimentalgruppe (EG) wurden während eines virtuellen Ballspieles (Cyberball) von den anderen beiden Spielern ausgeschlossen, indem dem Proband nur zu Beginn zweimal der Ball zugespielt wurde. Zudem erhielten sie nach einem schriftlichen Leistungstest eine negative Rückmeldung. Die Probanden der Kontrollgruppe (KG) wurden in das virtuelle

Ballspiel integriert, indem sie durchschnittlich oft den Ball zugespielt bekamen. Außerdem erhielten sie nach dem Test ein neutrales Feedback.

Die Neigung zu psychotischen Symptomen wurde vor der experimentellen Bedingung mittels des Fragebogens Community Assessment of Psychotic Experiences (CAPE, Stefanis et al., 2002) erfragt. Vor und nach der experimentellen Bedingung wurden die Gefühle anhand einer zehnstufigen Skala nach Stemmler et al. (2001) und das Selbstwertgefühl durch die Skala zum Selbstwertgefühl nach Rosenberg (RSE, von Collani & Herzberg, 2003) erfasst. Das Ausmaß paranoider Gedanken, die Überzeugungsstärke und die mit den paranoiden Gedanken assoziierte Bedrohung wurde mithilfe der Paranoia Checklist (Freeman et al., 2007) erhoben. Um das momentane Ausmaß des Selbstwertgefühls und der paranoiden Gedanken zu erfassen, wurden die Probanden gefragt, inwieweit die jeweilige Aussage auf sie „im Moment“ zutrifft. Die Werte der Paranoia Checklist vor der experimentellen Manipulation dienten zusätzlich als Index für die Neigung zu paranoiden Ideen.

Ergebnisse: Mittels repeated measures ANOVA und Post-hoc-Tests zeigte sich, dass sich die EG und die KG nicht vor, wohl aber nach der Stressinduktion in ihrer Ausprägung negativer Emotionen unterschieden (P = .44 vs. P = .01), wobei die EG mehr negative Emotionen beschrieb. In der ANOVA mit paranoiden Gedanken als Messwiederholungsfaktor und der Experimentalbedingung als Gruppenfaktor erwies sich der Interaktionseffekt von Gruppe × Zeit (F(1, 74) = 8.48, P = .005) als signifikant, der auf einen direkten Einfluss von sozialem Stress auf ein erhöhtes Ausmaß paranoider Gedanken hinweist.

Anhand der Moderatoranalyse wurde ersichtlich, dass der Einfluss von sozialem Stress auf das Ausmaß paranoider Gedanken durch die mit paranoiden Gedanken einhergehende Beunruhigung (β = .28, t = .2.97, P = .004), nicht jedoch durch die Neigung zu psychotischen Symptomen, die Anzahl paranoider Gedanken oder die Stärke der Überzeugung der paranoiden Gedanken moderiert wurde. Mittels der Johnson-Neyman-Methode konnte der signifikante Effekt dahingehend interpretiert werden, dass Personen, die sich vermehrt durch paranoide Gedanken beunruhigt fühlen („paranoia distress score“ PR ≥ 51), unter sozialem Stress eher zu einem Anstieg paranoider Gedanken neigen als weniger beunruhigte Personen.

Um Veränderungen in der Ausprägung momentaner paranoider Gedanken und im Selbstwertgefühl zwischen den beiden Messungen (vor vs. nach experimenteller Bedingung) abzubilden, wurde der Differenzwert berechnet. Die Mediationsanalyse zeigte, dass sozialer Stress das Ausmaß paranoider Gedanken (β = .32) und das Selbstwertgefühl (β =- .35) signifikant beeinflusst. Zudem zeigte sich ein signifikanter Effekt der Veränderungen im

Selbstwertgefühls auf das Ausmaß paranoider Gedanken (β =- .32). Der Effekt von sozialem Stress auf paranoide Gedanken erwies sich nicht mehr signifikant, wenn die Veränderungen im Selbstwertgefühl in das Modell inkludiert wurden (β = .21). Der Mediationseffekt wurde mittels bootstrapping-Methode bestätigt (CI .45 – 3.86).

Diskussion: Im Einklang mit Vulnerabilitäts-Stress-Modellen konnte gezeigt werden, dass sozialer Stress zu einem Anstieg subklinischer paranoider Gedanken führt. Darüberhinaus erwies sich eine momentane Reduktion im Selbstwertgefühl als ein Mediator des Einflusses von Stress auf den Anstieg paranoider Gedanken. Somit konnten die Ergebnisse einer Experience-Sampling-Studie, dass eine Reduktion im Selbstwertgefühl dem Anstieg paranoider Gedanken vorausgeht (Thewissen et al., 2008), bestätigt und erweitert werden.

Der Anstieg paranoider Gedanken unter Stress wurde nicht durch die allgemeine Neigung zur Positivsymptomatik moderiert, was im Gegensatz zu vorherigen experimentellen Studien steht (Lincoln, Lange, et al., 2010). Dagegen erwies sich die mit den paranoiden Gedanken assoziierte Beunruhigung als ein entsprechender Moderator in der Hinsicht, als dass Personen, die durch paranoide Gedanken stark beunruhigt sind, unter Stress eher mit einem Anstieg paranoider Gedanken reagieren. Dies weist darauf hin, dass die emotionalen Aspekte der Neigung zu paranoiden Gedanken für die Stresssensitivität von Bedeutung sein könnten.

Um Rückschlüsse auf die Prozesse bei der Entstehung von Verfolgungswahn zu ziehen, bedarf es der Replikation der Ergebnisse an einer Stichprobe von Patienten mit klinisch relevantem Verfolgungswahn. Der durch Stress ausgelöste Anstieg paranoider Gedanken bei vulnerablen Personen weist auf die Notwendigkeit des Einsatzes von Präventionsprogrammen hin (z.B. Bechdolf et al., 2005), durch die ein verbesserter Umgang mit Stress geschaffen und dadurch einer psychotischen Phase vorgebeugt werden könnte. Zusätzlich sollten sowohl Präventionsprogramme als auch kognitiv-behaviorale Interventionen für Patienten mit Wahn Techniken enthalten, durch die Patienten lernen können, ein stabiles Selbstwertgefühl aufzubauen.

3.3 Die Relevanz des Selbstwertgefühls und der Selbstschemata für Verfolgungswahn (Artikel 3 - Review)

Kesting, M.-L. & Lincoln, T.M. (in rev.). The relevance of self-esteem and self-schemas to persecutory delusions: A systematic review.

Einleitung: Während eine Verbesserung des Selbstwertgefühls bei Menschen mit Verfolgungswahn häufig ein Ziel therapeutischer Interventionen darstellt, ist die konkrete Rolle des Selbstwertgefühls bei der Entstehung von Verfolgungsideen noch nicht vollständig geklärt. Es entstand eine Reihe von Theorien, die unterschiedliche Ausprägungen und Funktionen des Selbstwertgefühls bei Menschen mit Verfolgungsideen betonen. Bentall et al. (1994; 2001) schreiben dem Verfolgungswahn eine selbstwertschützende Funktion zu und postulieren deshalb einen normalen bis erhöhten expliziten, jedoch einen erniedrigten impliziten Selbstwert und somit eine Diskrepanz zwischen expliziten und impliziten Selbstwert bei Menschen mit Verfolgungswahn. Freeman et al. (2002) gehen dagegen davon aus, dass Patienten negative und spezifische Selbstschemata haben, deren Inhalt sich im Verfolgungswahn direkt widerspiegelt. Eine weitere Theorie betont, dass der Selbstwert bei Menschen, die ihre Verfolgung als berechtigt wahrnehmen, erniedrigt ist (Trower & Chadwick, 1995). Schließlich wurde die Theorie aufgestellt, dass das Selbstwertgefühl bei Menschen mit paranoiden Gedanken schwankt und insgesamt instabil ist (Thewissen et al., 2008). Ziel dieses Artikels ist es, anhand der bisher erschienenen Studien im Rahmen eines Reviews zu untersuchen, welche Aspekte des Selbstwerts für die Entstehung paranoider Ideen relevant sind und inwieweit sich die bisherigen Theorien zum Selbstwertgefühl bei Menschen mit Verfolgungsideen als haltbar erweisen.

Methode: Es erfolgte eine Literatursuche mittels „PsychINFO“ und MEDLINE“ im März 2012 mit den Suchbegriffen „self-esteem or self-worth or self-concept or schema*“ in Kombination mit „paranoi* or delus* or delud* or persecut* or suspicious*“. Die Suche wurde eingegrenzt auf englischsprachige Artikel in peer-reviewed Journals, die von 1967 bis März 2012 veröffentlicht wurden. Zusätzlich wurden bisherige Übersichtsartikel gescreent. Eingeschlossen wurden empirische, quantitative Studien, die Verfolgungsideen und das Selbstwertgefühl an Patienten mit schizophrenen Störungen oder an gesunden Menschen mit einer Neigung zu paranoiden Ideen erhoben hatten. Zur Erfassung des Selbstwertgefühls konnten verschiedene Paradigmen wie explizite und implizite Verfahren, Fragebögen zu spezifischen Selbstkonzepten und Verfahren zur Erfassung von Selbstwertschwankungen verwendet werden. Um zu überprüfen, ob die Ergebnisse gegenüber einem Publikationsbias

abgesichert sind, wurde die "fail-safe-N-Rate" nach Rosenthal (1979) berechnet. Für die Studien mit entsprechend robusten Ergebnissen erfolgte zudem eine Schätzung der Effektstärken (ES).

Ergebnisse: Von den 317 durch die Literatursuche ermittelten Studien erfüllten 52 die Einschlusskriterien. Gegenüber dem Publikationsbias als abgesichert gilt die Befundlage, dass Menschen mit Verfolgungsideen ein erniedrigtes explizites, globales Selbstwertgefühl im Vergleich zu gesunden Probanden haben (mittlere bis große ES), ihr Selbstwertgefühl im Vergleich zu Menschen mit Depressionen aber weniger stark erniedrigt ist (große ES). Es besteht außerdem ein relevanter Zusammenhang von Selbstwerteinbußen mit subklinischen paranoiden Ideen (kleine bis mittlere ES). Das implizite Selbstwertgefühl wurde in nur wenigen Studien untersucht, die inkonsistente Ergebnisse hervorbrachten. Die Diskrepanz zwischen explizitem und implizitem Selbstwert wurde in zwei Studien systematisch untersucht und konnte nicht bestätigt werden.

Die Befundlage kann gegenüber dem Publikationsbias als robust gelten, dass klinisch relevante und subklinische Verfolgungsideen mit negativen Selbstschemata einhergehen (jeweils mittlere bis große ES), während die Befundlage uneinheitlich ist, ob sich Menschen mit akuten und remittierten Verfolgungsideen voneinander und von Menschen mit Depressionen in ihren negativen Selbstschemata unterscheiden. In Bezug auf positive Selbstschemata unterscheiden sich Patienten mit akuten oder remittierten Verfolgungsideen nicht von gesunden Menschen, scheinen aber mehr positive Selbstschemata aufzuweisen als Menschen mit Depressionen. Wenige Studien untersuchten spezifische Selbstschemata, die erste Hinweise darauf geben, dass interpersonelle Schemata für Menschen mit Verfolgungsideen relevant sind.

Weiterhin scheint ein stärkeres Ausmaß, in dem Menschen glauben, zu Recht verfolgt zu werden, mit einem erniedrigten globalen Selbstwert und mit negativen Selbstschemata einherzugehen, wobei diese Ergebnislage auf wenigen Studien beruht. Sieben Studien fanden einen Zusammenhang zwischen der Instabilität des Selbstwerts und klinisch relevanten und subklinischen Verfolgungsideen. Aufgrund der unterschiedlichen Studiendesigns wurde darauf verzichtet, die Fail-save-N-Rate für diesen Ergebnisteil zu berechnen.

Diskussion: Durch die aktuelle Studienlage kann somit die Theorie, dass Verfolgungsideen dazu dienen, den Selbstwert zu schützen, nicht befürwortet werden. Dagegen untermauern die Ergebnisse die Theorie, dass Verfolgungsideen im Einklang mit negativen Selbstschemata sind. Die Studienlage spricht zudem für die Theorien, dass der Selbstwert bei den Menschen,

die glauben, ihre Verfolgung geschehe zu Recht, erniedrigt ist, sowie für die Theorie, dass die Instabilität des Selbstwerts für Verfolgungsideen relevant ist, wobei die beiden letztgenannten Theorien bislang nur durch wenige Studien belegt sind.

Die Berechnung der fail-save-N-Raten und die Einbeziehung der Effektstärken trugen zur besseren Interpretierbarkeit der Befunde bei. Dennoch ist anzumerken, dass für eine reliable Schätzung der Effektstärken eine Auswertung der einzelnen Effektstärken im Rahmen einer Meta-Analyse notwendig gewesen wäre, dies jedoch über den Rahmen des Reviews hinausgegangen wäre.

Die erzielten Ergebnisse werden in ein Erklärungsmodell integriert, das die Rolle des Selbstwerts bei der Entstehung von Verfolgungsideen betont. Dabei wird davon ausgegangen, dass kritische interpersonelle Ereignisse die Ausprägung negativer Selbstschemata begünstigen könnten. Unter Stress könnten negativen Selbstschemata reaktiviert werden, was zu einer momentanen Reduktion im Selbstwert und in Kombination mit kognitiven Fehlern zur Entstehung paranoider Gedanken führen könnte. Die Interpretation, die Verfolgung geschehe zu Recht, könnte bestehende negative Schemata wiederum verstärken.

4. Zusammenfassende Diskussion und Ausblick

Ziel der vorliegenden Arbeit war es, die Ausprägung und Veränderungen im Selbstwert im Zusammenhang mit klinisch relevanten und subklinischen Verfolgungsideen zu untersuchen, um dadurch das Verständnis für die Bedeutung des Selbstwertgefühls bei der Entstehung und Aufrechterhaltung von Verfolgungswahn zu erweitern. Insgesamt wurde in allen drei Artikeln deutlich, dass ein erniedrigter Selbstwert für Verfolgungsideen relevant ist.

Es erfolgt eine Diskussion der Befunde im Hinblick auf die drei Forschungsfragen dieser Dissertation. Im Anschluss werden die Befunde in ein Erklärungsmodell zur Rolle des Selbstwertgefühls bei der Entstehung und Aufrechterhaltung von Verfolgungswahn integriert, bevor Limitationen, offene Fragen und klinische Implikationen abgeleitet werden.

Expliziter und impliziter Selbstwert und deren Diskrepanz bei Patienten mit Verfolgungswahn

Der Befund aus Artikel 1, dass Patienten mit Wahn ein im Vergleich zu gesunden Probanden erniedrigtes explizites Selbstwertgefühl haben, steht im Einklang mit der Mehrzahl der bisher veröffentlichten Studien zum globalen Selbstwert bei Menschen mit Verfolgungsideen (siehe Review - Artikel 3). Es zeigten sich keine Anhaltspunkte für ein erniedrigtes implizites Selbstwertgefühl oder eine Explizit-Implizit-Diskrepanz bei Patienten mit Verfolgungsideen, sodass die Befunde insgesamt nicht für eine selbstwertschützende Funktion des Wahns, wie sie von Bentall (1994) postuliert wurde, sprechen.

Diese Ergebnisse werfen jedoch die Frage auf, ob mithilfe von Querschnittstudien und des Vergleichs des Selbstwerts bei Patienten mit Wahn und gesunden Personen valide Rückschlüsse auf oben genannte Theorie gezogen werden können. So sprechen die Ergebnisse aus Artikel 2 dafür, dass eine kurzfristige Veränderung im globalen Selbstwertgefühl einen wichtigen Faktor bei der Entstehung paranoider Gedanken darstellt. Weitere experimentelle Studien und Experience-Sampling-Studien könnten somit untersuchen, ob nach der Reduktion im Selbstwertgefühl und dem Anstieg paranoider Gedanken ein erneuter Anstieg im Selbstwertgefühl zu verzeichnen ist. Ein positives Ergebnis könnte dann möglicherweise als ein Hinweis auf eine selbstwertschützende Funktion des Wahns gedeutet werden.

Insgesamt sprechen die Ergebnisse aus Artikel 1 für die Bedeutung eines erniedrigten expliziten, globalen Selbstwertgefühls bei Menschen mit Verfolgungsideen, wie es auch im kognitiven Modell von Freeman et al. (2002) postuliert wurde. Die Selbstwerteinbußen scheinen dabei nicht verdeckt, sondern (trotz des Verfolgungswahns) offen vorzuliegen. Zusätzlich weisen die Ergebnisse aus Artikel 3 darauf hin, dass Menschen mit Verfolgungsideen durch ausgeprägte (offen vorliegende) negative Selbstschemata und gleichzeitig durch positive Selbstschemata charakterisiert sind. Eine mögliche Interpretation dieses Befundes wäre daher, dass die erhalten gebliebenen positiven Selbstschemata auf eine anteilig selbstwertschützende Funktion des Wahns hinweisen könnten.

Der Einfluss von sozialem Stress auf das Selbstwertgefühl und die Ausprägung paranoider Gedanken

In Artikel 2 wurde erstmals der direkte Einfluss von sozialem Stress auf Veränderungen im Selbstwertgefühl und auf die Ausprägung paranoider Gedanken mithilfe

eines experimentellen Designs untersucht. Die Befunde aus Artikel 2 stehen im Einklang mit der Theorie, dass die Instabilität des Selbstwerts ein wichtiger Faktor bei der Entstehung von Verfolgungsideen darstellen kann (Thewissen et al., 2007) und sind konform mit der in Artikel 3 zusammengefassten Studienlage zur Instabilität des Selbstwerts. Zudem sprechen die Ergebnisse dafür, dass eine Reduktion im Selbstwertgefühl nicht nur zeitlich eng mit einem Anstieg paranoider Gedanken verbunden ist (Thewissen et al., 2008), sondern dass sozialer Stress ein Auslöser für die Reduktion im Selbstwertgefühl darstellt und dem veränderten Selbstwertgefühl eine mediierende Rolle im Prozess zukommt.

Die Untersuchung aus Artikel 2 war somit aufschlussreich, um die Rolle des Selbstwertgefühls bei einem Anstieg paranoider Gedanken zu bestätigen. Gleichzeitig ist die Interpretierbarkeit der Ergebnisse eingeschränkt, da eine Reduktion im Selbstwertgefühl mit hoher Wahrscheinlichkeit nicht den alleinigen kognitiv-emotionalen Faktor bei der Entstehung paranoider Gedanken unter Stress darstellt, auch wenn Stresserleben zu Selbstwertschwankungen führen kann (Palmier-Claus, Dunn, Morrison, & Lewis, 2011). So gehen Theorien zur Entstehung von Verfolgungsideen von einem multifaktorielles Modell aus, in dem ein erniedrigtes Selbstwertgefühl *einen* relevanten Faktor bei der Entstehung der Symptomatik in Kombination mit kognitiven Fehlern und Defiziten in der Emotionsregulation (siehe Kapitel 1.1.5) darstellt. Eine Studie von Bentall und Kollegen (2009) hat bereits mittels mathematischer Modelle die Relevanz spezifischer kognitiver und emotionaler Prozesse für Verfolgungsideen bestätigt. Auch weitere neuere Studien weisen darauf hin, dass ein vermindertes Selbstwertgefühl in Kombination mit kognitiven Verzerrungen oder emotionalen Schwierigkeiten paranoide Gedanken beeinflusst: So zeigte eine nichtklinische Längsschnittstudie, dass der Einfluss negativer Selbst- und Fremdschemata auf die Ausprägung wahnhafter Gedanken durch Angst mediiert wurde (Oliver, O'Connor, Josec, McLachlanb, & Peters, 2012). Dieser Effekt wurde zudem durch das Konstrukt psychologische Flexibilität moderiert, wobei der Effekt bei Probanden mit einer höheren psychologischen Flexibilität geringer ausgeprägt war. Eine weitere experimentelle Studie verdeutlicht, dass ein reduziertes Selbstwertgefühl den Einfluss von Stress auf Emotionen sowie von Emotionen auf paranoide Gedanken jedoch nicht moderiert (Palmier-Claus et al., 2011). Insgesamt scheint somit die Untersuchung eines reduzierten Selbstwertgefühls in Kombination mit weiteren kognitiv-emotionalen Mechanismen aufschlussreich, um die Prozesse bei der Entstehung paranoider Gedanken noch differenzierter zu betrachten.

Die Relevanz des Selbstwertgefühls und der Selbstschemata für Verfolgungswahn

Die Bedeutung unterschiedlicher Aspekte des Selbstwertgefühls für Verfolgungsideen wurde systematisch anhand des aktuellen Forschungsstandes im Rahmen eines Reviews in Artikel 3 untersucht. Hierbei wurden die Ergebnisse im Hinblick auf die in Kapitel 1.2.2-1.2.5 beschriebenen Theorien zum Selbstwertgefühl bei Menschen mit Verfolgungswahn ausgewertet. Das bedeutendste Ergebnis des Reviews ist, dass Menschen mit subklinischen und klinisch relevanten Verfolgungsideen durch ein stark erniedrigtes globales Selbstwertgefühl und negative Selbstschemata charakterisiert sind. Dieses spricht somit insgesamt dafür, dass Selbstwerteinbußen generell relevant für Verfolgungsideen sind, wie es in allen in Kapitel 1.2 vorgestellten Theorien postuliert wird. Insbesondere kann jedoch die Theorie, dass Verfolgungsideen im Einklang mit bestehenden negativen Einstellungen über die eigene Person sind (Freeman et al., 2002) durch die Befunde befürwortet werden. Des Weiteren sprechen einzelne Studien dafür, dass spezifische Selbstschemata, die von der Akzeptanz anderer abhängen, für Verfolgungsideen relevant sind. Dieses mag damit zusammenhängen, dass Patienten mit Verfolgungsideen zusätzlich negative Fremdschemata aufweisen (Fowler et al., 2006; MacKinnon et al., 2011), was ihre Vorstellung erschweren mag, sich von anderen akzeptiert zu fühlen. Zusätzlich fanden sich einheitliche Befunde aus allerdings nur wenigen Studien, die dafür sprechen, dass ein stärkeres Ausmaß, in dem die wahrgenommene Verfolgung als gerechtfertigt empfunden wird, mit einem geringeren Selbstwert einhergeht und dass die Instabilität des Selbstwertgefühls ein relevanter Faktor für die Entstehung von Verfolgungsideen ist.

Die Ergebnisse aus der Übersichtsarbeit können somit eine wichtige Grundlage darstellen, um Aspekte des Selbstwertgefühls bei der Entstehung und Aufrechterhaltung von Verfolgungsideen weiter zu erforschen. Auf der Grundlage der Auswertung der aktuellen Studienlage konnte ein Erklärungsmodell entwickelt werden, von dem wiederum klinische Schlussfolgerungen abgeleitet werden können:

Integration der Befunde in ein Erklärungsmodell zur Bedeutung des Selbstwerts bei der Entstehung und Aufrechterhaltung von Verfolgungsideen

Bisherige Theorien haben die Ausprägung und Schwankungen des Selbstwerts bei Personen mit Verfolgungsideen betont und teils Assoziationen zu Attributionsprozessen hervorgehoben (Bentall et al., 2001). Im kognitiven Modell zur Entstehung paranoider Ideen wird außerdem berücksichtigt, dass Verfolgungsideen geprägt von und im Einklang mit negativen Ansichten

über sich selbst, andere und die Welt sind (Freeman et al., 2002). Weniger detailliert wurde jedoch beschrieben, wie genau negative Selbstschemata bei Menschen mit (einer Neigung zu) paranoiden Ideen entstehen und wie diese an der Entstehung paranoider Gedanken beteiligt sind.

Das in Abbildung 2 dargestellte hypothetische Erklärungsmodell beschreibt die mögliche Rolle des Selbstwertgefühls bei der Entstehung und Aufrechterhaltung von Verfolgungsideen. Es wurde in Anlehnung an das Vulnerabilitäts-Stress-Model (Zubin & Spring, 1977) und bisherige kognitive Modelle für positive Symptome (Freeman et al., 2002; Garety et al., 2001) und auf der Grundlage der Befunde dieser Dissertation (insbesondere Artikel 3) entwickelt. Im Modell wird generell davon ausgegangen, dass Menschen mit Verfolgungsideen starke Selbstzweifel aufweisen (Artikel 1 und Artikel 3) und dass ihr Selbstwert instabil ist (Artikel 2 und Artikel 3). Im Wesentlichen wird beschrieben, wie alltägliche Stressoren bei vorhandener Vulnerabilität Verfolgungsideen verstärken und wie dieser Prozess, in Anlehnung an die Befunde aus Artikel 2, durch eine Reduktion im Selbstwertgefühl mediiert wird. Um zu erklären, wie negative Selbstschemata bei Menschen mit Verfolgungsideen entstehen, wurden Befunde weiterer Studien in das Modell integriert, die die Rolle prägender kritischer Ereignisse betonen. Das Modell wird im Folgenden vorgestellt (Abb. 2).

Entstehung von Verfolgungsideen: Verschiedene Studien sprechen dafür, dass kritischen Lebensereignisse wie negative Kindheitserlebnisse (Varese et al., 2012) oder Diskriminierung (Janssen et al., 2003) einen Risikofaktor für die Entwicklung psychotischer Erkrankungen darstellen. Zudem scheinen traumatische Ereignisse mit Selbstwerteinbußen und einem erhöhten Ausmaß paranoider Gedanken assoziiert zu sein (Freeman & Fowler, 2009). Somit wird im Modell davon ausgegangen, dass negative Selbstschemata, insbesondere interpersonelle Selbstschemata bei Menschen mit Psychosen durch kritische Lebensereignisse geprägt werden. Es wird weiterhin postuliert, dass negative kognitive und emotionale Reaktionen, die mit dem früheren Ereignis assoziiert sind, in einer späteren, stressreichen Situation bei vulnerablen Personen reaktiviert werden. Dadurch könnten negative Selbst- und Fremdschemata aktiviert werden, was mit einer momentanen Reduktion im Selbstwertgefühl einhergeht. Letzteres mag wiederum eine Zunahme negativer Emotionen, insbesondere Angst, begünstigen (Oliver et al., 2012), wobei die Wahrnehmung von Angst als Signal einer Bedrohung wahrgenommen werden kann (Freeman et al., 2002). Die bisher gut belegten Schwierigkeiten in der Emotionsregulation (Westermann & Lincoln, 2011) sowie kognitive Verzerrungen (z.B. Jumping to Conclusions, Fine et al., 2007) tragen in der Folge dazu bei,

dass die als bedrohlich wahrgenommene Situation nicht realistisch und funktional interpretiert wird, sondern in eine paranoide Interpretation münden kann. Paranoide Ideen könnten somit aufgrund reaktivierter negativer Selbst- und Fremdschemata und der Schwierigkeit, eine Situation realistisch und funktional zu bewerten, entstehen und dazu dienen, negative Emotionen zu regulieren.

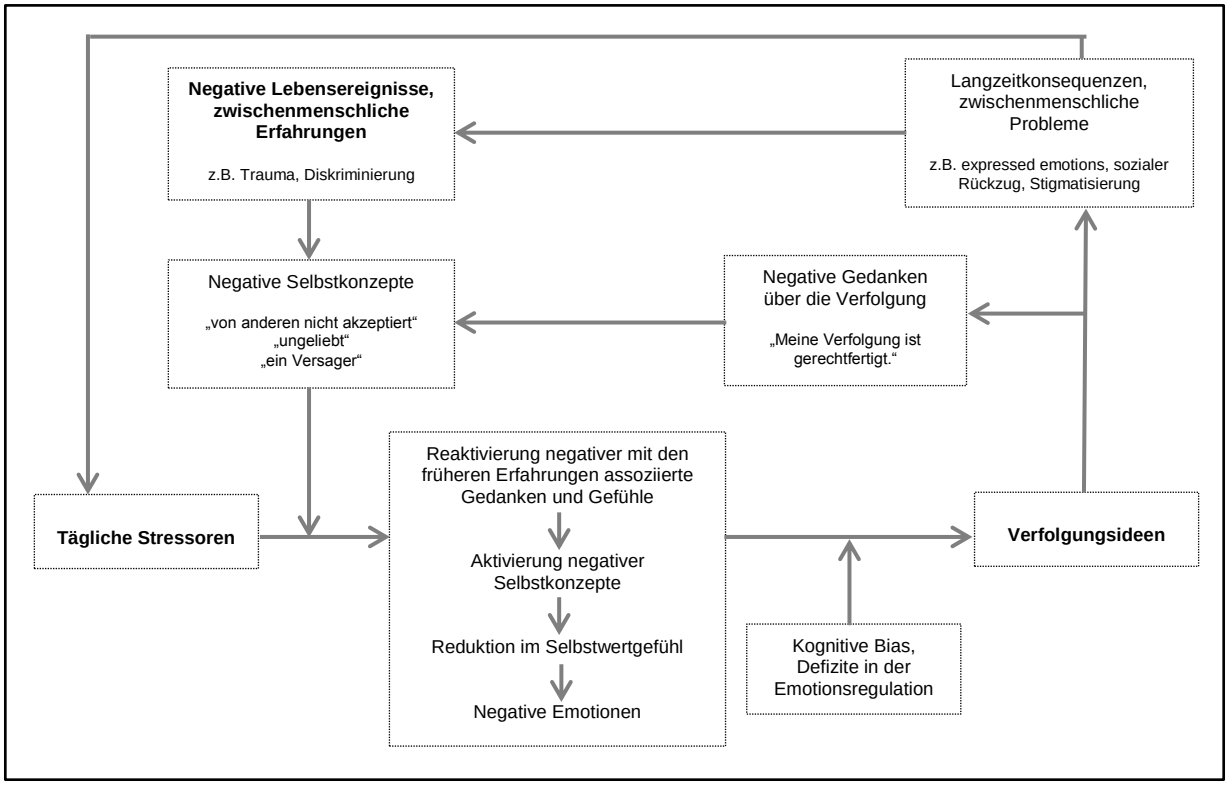

Abb. 2: Erklärungsmodell zur Rolle des Selbstwertgefühls und der Selbstschemata bei der Entstehung und Aufrechterhaltung von Verfolgungsideen

Aufrechterhaltung von Verfolgungsideen: Der Patient mag schließlich aufgrund seiner paranoiden Ideen dazu neigen, Sicherheitsverhalten einzusetzen und sich zurückzuziehen (Freeman et al., 2001). Möglicherweise wird er aufgrund der Wahnideen zusätzlich von anderen Personen kritisiert oder stigmatisiert, was zu ausbleibenden positiven interpersonellen Situationen bzw. zu erneuten stressreichen Situationen führt und den Teufelskreis aufrecht erhält. Zusätzlich könnten die negativen Interpretationen der wahrgenommenen Verfolgung - insbesondere der Gedanke, zu Recht verfolgt zu werden - die negativen Selbstschemata verstärken und aufrechterhalten.

An dieser Stelle soll angemerkt werden, dass ein erniedrigtes implizites Selbstwertgefühl bzw. die selbstwertschützende Funktion des Verfolgungswahns nicht in das Modell integriert wurden, da Artikel 1 und Artikel 3 diese Theorie nicht stützen.

Limitationen

Auf die Limitationen der einzelnen Untersuchungen wurde in der Diskussion der jeweiligen Artikel bereits eingegangen. Dabei wurde insbesondere die eingeschränkte Übertragbarkeit der Ergebnisse aus Artikel 2 auf die Entstehung klinisch relevanter Verfolgungsideen aufgrund der Verwendung einer nichtklinischen Stichprobe und die eingeschränkte Berechnung der Effektstärken (Artikel 3) betont. An dieser Stelle soll deshalb auf übergeordnete Limitationen eingegangen werden. So integriert das oben beschriebene Modell zwar die bisherigen Befunde zum Selbstwert bei Menschen mit Verfolgungsideen und bietet dadurch einen ersten zusammenfassenden Erklärungsansatz dafür, welche Faktoren zur Entstehung von Selbstwerteinbußen und negativen Selbstschemata beitragen und wie diese wiederum die Entstehung und Aufrechterhaltung paranoider Gedanken begünstigen mögen. Für einige der dargestellten Zusammenhänge existieren, wie beschrieben, gute Belege. Dennoch ist anzumerken, dass andere Zusammenhänge offen bleiben und weiterer Forschung bedürfen. So gibt es zwar Belegen dafür, dass vergangene kritische Ereignisse mit Selbstwerteinbußen einhergehen (z.B. Freeman & Fowler, 2009), während bislang noch offen ist, ob die Selbstwerteinbußen, wie im Modell postuliert, aufgrund der Reaktivierung negativer Selbstschemata aus früheren traumatischen Situationen entstehen könnten. Hierfür - und für die Überprüfung weiterer Zusammenhänge - wären Längsschnittstudien sowie weitere spezifische Untersuchungen mittels Experience-Sampling-Studien hilfreich, die kurzfristige Veränderungen von Stress, Emotionen, Selbstwert und Wahn im Alltag unter der Berücksichtigung früherer negativer Erfahrungen erfassen könnten.

Da ein niedriges Selbstwertgefühl auch ein Symptom einer Depression darstellt (Dilling et al., 2000) und Menschen mit Verfolgungsideen häufig komorbid Depressionen aufweisen, hätte dem Zusammenhang zwischen dem Selbstwertgefühl und der Depressivität in dieser Dissertationsarbeit mehr Bedeutung zugemessen werden können. In Artikel 3 wurde diesem Aspekt jedoch nachgekommen, indem die Studien auch dahingehend ausgewertet wurden, ob Depressivität als Kovariate in der Analyse des Zusammenhangs zwischen dem Selbstwert und Verfolgungsideen berücksichtigt wurde (siehe Tabelle 2, Review).

Im Rahmen des Reviews wurden zwei Studien zitiert (Raes & Van Gucht, 2009; Thewissen et al., 2008), die darauf hindeuten, dass paranoide Gedanken stärker mit der Instabilität des Selbstwerts als mit einem global erniedrigten Selbstwert verbunden sind. Dieser Aspekt hätte in Artikel 2 ebenfalls untersucht werden können. Insgesamt scheint die Untersuchung verschiedener Aspekte des Selbstwertgefühls (globaler Selbstwert, negative und spezifische Aspekte, Berücksichtigung des „Poor me"- vs. „Bad me"-Paranoia Typus und Fluktuation) an derselben Stichprobe vielversprechend, um besser zwischen bedeutsamen und weniger bedeutsamen Aspekten des Selbstwerts zu differenzieren und um in der Therapie gezielt auf die relevanten Kognitionen eingehen zu können.

Offene Fragen und Ausblick

Die Ergebnisse dieser Arbeit tragen zu einem verbesserten Störungsverständnis von Verfolgungsideen im Rahmen psychotischer Störungen bei. Dennoch bleiben einige Fragen offen bzw. konnten durch die gefundenen Ergebnisse dieser Dissertation neu aufgeworfen werden.

So erscheint es zum einen aufschlussreich, zwischen unterschiedlichen Facetten paranoider Gedanken zu differenzieren, um das Zusammenwirken mit kognitiven Mechanismen zu untersuchen. Wie bereits dargestellt, zeigte eine Untersuchung von Moritz et al. (in press), dass voreiliges Schlussfolgern mit psychopathologischen Facetten von Paranoia, nicht jedoch mit unspezifischem Misstrauen („unspecific suspiciousness") assoziiert war. Deshalb scheint es sinnvoll, auch bei der Betrachtung des Zusammenhangs zum Selbstwertgefühl zwischen diesen beiden Facetten paranoider Gedanken zu unterscheiden, insbesondere, um differenzierte Aussagen über das Selbstwertgefühl in unterschiedlichen Phasen (Prodromalphase, akut, remittiert) der schizophrenen Störung treffen zu können.

Zum anderen gilt es, in zukünftigen Studien das Selbstwertgefühl in Verbindung mit weiteren Symptomen zu untersuchen, da ein vermindertes Selbstwertgefühl nicht nur bei Menschen mit Verfolgungsideen, sondern auch generell bei Menschen mit Schizophrenie gefunden wurde (Moritz, Veckenstedt, Randjbar, et al., 2010). Eine Studie von Smith et al. (2006) zeigte, dass negative Selbstschemata mit Verfolgungsideen, nicht jedoch mit Positivsymptomatik im Allgemeinen, Halluzinationen oder Größenwahn korrelieren. Dagegen zeigte eine neuere Studie mittels Experience-Sampling-Methode, dass ein negativer Selbstwert das Auftreten von Kontroll-, Beziehungs- und Größenwahn bei Menschen mit Schizophrenie vorhersagte (Ben-Zeev, Morris, Swendsen, & Granholm, 2012). Somit ist die

Bedeutung des Selbstwertgefühls für die Positivsymptomatik noch nicht hinreichend geklärt. Dagegen gibt es Hinweise darauf, dass ein vermindertes Selbstwertgefühl und spezifische negative Selbstschemata auch mit Negativsymptomen im Zusammenhang stehen (Lincoln, Mehl, Kesting, & Rief, 2011), die ermutigen, die Rolle des Selbstwertgefühls bei Schizophrenie auch symptomübergreifend zu untersuchen.

Klinische Implikationen

Obwohl einige Fragen zum spezifischen Einfluss des Selbstwertgefühls bei der Entstehung paranoider Gedanken offen sind, können dennoch aus den Ergebnissen dieser Dissertation klinische Schlussfolgerungen gezogen werden. Das übergreifende Ergebnis dieser Arbeit, dass Patienten mit akutem und remittiertem Verfolgungswahn unter einem stark verminderten Selbstwertgefühl leiden, betont die Relevanz selbstwertsteigernder Techniken, die im Rahmen kognitiv-behavioraler Interventionen eingesetzt werden sollten. Neben klassischen kognitiv-behavioralen Interventionen für Patienten mit Psychosen (z.B. Fowler et al., 1995; Lincoln, 2006), die Elemente zur Selbstwertsteigerung erhalten, sind eine Reihe selbstwertspezifischer Interventionen entwickelt worden. Hierbei sei insbesondere auf einen Therapiebaustein aus dem Meta-kognitive Training (Moritz, Vitzthum, et al., 2010) hingewiesen, mithilfe dessen der Patient gezielt übt, realistische und positive Aussagen über sich selbst zu treffen. Auch mithilfe von Imaginationsübungen aus der „compassion focused therapy“ (Gilbert, 2010) kann der Patient lernen, einen liebevollen Umgang mit sich selbst zu gewinnen. Es gibt eine Reihe von Studien, die auf positive Veränderungen des Selbstwertgefühls nach kognitiv-behavioraler Therapie mit selbstwertsteigernden Elementen hinweisen (Borras et al., 2009; Hall & Tarrier, 2003; Laithwaite et al., 2007) und die ermutigen, Patienten mit Schizophrenie weiterhin in diesem Bereich gezielt zu unterstützen und zu fördern.

Die Befunde aus Artikel 3 betonen außerdem die Notwendigkeit des Einsatzes von Präventionsprogrammen für Personen mit Prodromalsymptomatik (z.B. Bechdolf et al., 2005), um den Umgang mit Stress zu verbessern und dadurch psychotischen Episoden vorzubeugen. Zusätzlich spricht das aus der bisherigen Literatur abgeleitete Erklärungsmodell dafür, dass es hilfreich erscheint, therapeutisch gezielt am Umgang mit möglichen kritischen Lebensereignissen anzusetzen, um deren Auswirkung auf negative Selbstkonzepte und die Symptomatik zu reduzieren. Eine Pilotstudie erbrachte diesbezüglich vielversprechende Ergebnisse, in dem sie zeigen konnte, dass eine Behandlung mittels Eye Movement

Desensitization and Reprocessing (EMDR) bei Patienten mit Psychosen und komorbider posttraumatischer Belastungsstörung (PTB) zu einer Reduktion der PTB- und der Positivsymptomatik sowie zu einer Verbesserung des Selbstwerts führte.

Zusammenfassend lässt sich somit feststellen, dass es zum einen notwendig erscheint, bestehenden negativen Selbstkonzepten bei Patienten mit Wahn direkt mithilfe selbstwertsteigernder Interventionen entgegen zu wirken. Zum anderen erscheint es hilfreich, den Umgang mit Stress und früheren kritischen Ereignissen gezielt zu verbessern, um dadurch der Entwicklung negativer Selbstschemata sowie wahnhafter Symptome vorzubeugen.

Fazit

Die Untersuchungen dieser Dissertation leisten einen wichtigen Beitrag zum besseren Verständnis kognitiv-emotionaler Prozesse bei der Entstehung und Aufrechterhaltung von Verfolgungswahn, das eines der wichtigsten Symptome im Rahmen schizophrener Störungen darstellt. Die Befunde der Dissertation weisen auf globale Selbstwerteinbußen und negative Selbstschemata bei Menschen mit Verfolgungsideen hin und betonen die mediierende Rolle des Selbstwertgefühls bei der Ausprägung paranoider Gedanken unter Stress. Die Ergebnisse wurden zusammenfassend in einem Erklärungsmodell dargestellt, das mögliche Ursachen eines erniedrigten Selbstwertgefühls und eine momentane Reduktion des Selbstwertgefühls im Entstehungsprozess paranoider Gedanken berücksichtigt. Die Studien dieser Dissertation haben neue Forschungsfragen aufgeworfen und auch das Erklärungsmodell bedarf, wie dargestellt, weiterer Forschung. Die Ergebnisse dieser Dissertation untermauern die Notwendigkeit, in der Therapie für Menschen mit Wahnphänomenen bewusst spezifische selbstwertsteigernde und -stabilisierende Interventionen einzusetzen, durch die möglicherweise auch die wahnhafte Symptomatik reduziert werden könnte.

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6. Anhang

Anhang A: Artikel 1

Kesting, M.-L., Mehl, S., Rief, W., Lindenmeyer, J. & Lincoln, T.M. (2011). When paranoia fails to enhance self-esteem: Explicit and implicit self-esteem and its discrepancy in patients with persecutory delusions compared to depressed and healthy controls. *Psychiatry Research* 186, 197-202.

Anhang B: Artikel 2

Kesting, M.-L., Bredenpohl, M., Klenke, J., Lincoln, T.M. (2013). The impact of social stress on self-esteem and paranoid ideation. *Journal of Behavior Therapy and Experimental Psychiatry* 44, 122-128.

Anhang C: Artikel 3

Kesting, M.-L. & Lincoln, T.M. (in rev.). The relevance of self-esteem and self-schemas to persecutory delusions: A systematic review.

Anhang D: Lebenslauf und Publikationen

Anhand E: Eidesstattliche Erklärung

Anhang A: Artikel 1

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When paranoia fails to enhance self-esteem: Explicit and implicit self-esteem and its discrepancy in patients with persecutory delusions compared to depressed and healthy controls

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ABSTRACT

The hypothesis that persecutory delusions function to enhance self-esteem implies that patients will show normal explicit, but low implicit self-esteem. As evidence for this has been inconsistent, our study assessed delusional state, explicit and implicit self-esteem and depression in a large sample ($n=139$) of schizophrenia patients with acute persecutory delusions ($n=28$), patients with remitted persecutory delusions ($n=31$), healthy controls ($n=59$), and depressed controls ($n=21$). Patients with delusions and patients with depression both showed decreased levels of explicit, but normal levels of implicit self-esteem when compared to healthy controls. The direct comparison of levels of explicit and implicit self-esteem within each group revealed that healthy controls had higher explicit than implicit self-esteem, while the converse pattern was found for depressed controls. No discrepancy between explicit and implicit self-esteem was found for acute deluded or remitted patients with schizophrenia. Although these findings do not support the hypothesis that delusions serve to enhance self-esteem, they underline the relevance of low self-esteem in patients with persecutory delusions and point to the necessity of enhancing self-esteem in therapy.

1. Introduction

Low self-esteem is associated with a range of mental disorders and social problems (Mann et al., 2004). During recent years, evidence from clinical (Thewissen et al., 2008) and nonclinical populations (Combs and Penn, 2004) demonstrates that negative self-evaluations are closely linked to paranoia. Thus, self-esteem has been included in the multicausal cognitive model of positive symptoms of psychosis (Garety et al., 2001; Kuipers et al., 2006) that postulates a loss of self-esteem, an external personal attributional style for negative events, impaired theory of mind and deficient reasoning processes to play an important role in the development and maintenance of delusions. Moreover, the model of persecutory delusions (Freeman et al., 2002) postulates negative evaluations of the self, others and the world to influence the formation of persecutory delusions, which then further confirm the negative evaluations and enhance the emotional distress. In support of this, a recent study by Bentall et al. (2009) demonstrated paranoia to be associated with cognitive deficits and a pessimistic thinking style, characterized by low self-esteem, a pessimistic explanatory style and negative emotions.

Nevertheless, the evidence for the first theory put forward by Bentall et al. (1994, 2001) which initiated the abundant research on self-esteem in patients with persecutory delusions has remained equivocal (Garety and Freeman, 1999; Freeman, 2007). Bentall et al. (1994, 2001) argued that persecutory delusions in patients with schizophrenia may serve to enhance their underlying low self-esteem by accusing others for their own failures. The mechanism that triggers this defensive reaction is the activation of a discrepancy between the actual-self (the way I actually am) and the ideal-self (the way I would like to be) by threat related events (Bentall et al., 1994). According to this theory, to reduce the discrepancy, patients with schizophrenia tend to attribute threatening information to another person. Bentall et al. (2001) argued that although the patients use an external personal attributional style for negative events, their negative self-schemas remain latent. Thus "a discrepancy between implicit indices of self-esteem and explicit measures might be thought to be particularly strong evidence for a defensive model" (p. 1164, Bentall et al., 2001). While patients with paranoia are supposed to show normal or even heightened self-esteem in direct or explicit measures, their implicit self-esteem is hypothesized to be low.

Explicit self-esteem is commonly assessed using questionnaires in which the participant is asked to rate self-related statements. Implicit self-esteem can be assessed using memory biases (e.g. the number of remembered positive and negative self-descriptive words) or reaction

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times for associations of self-related words with pleasant and unpleasant words (e.g. Implicit Association Task, IAT, Greenwald et al., 1998; Greenwald and Farnham, 2000).

In contrast to Bentall et al.'s (1994, 2001) hypothesis, patients with paranoia were found to have low rather than normal or high levels of explicit self-esteem compared to healthy controls (Moritz et al., 2006; McKay et al., 2007; Merrin et al., 2007; Vázquez et al., 2008; Combs et al., 2009). Implicit self-esteem was assessed only in few studies and the results are inconsistent. Using the well established IAT (Greenwald et al., 1998; Greenwald and Farnham, 2000), Moritz et al. (2006) and McKay et al. (2007) found patients with paranoia to have low levels of implicit self-esteem, whereas other studies (Bentall and Kaney, 1989; Fear, 1996) that used the Emotional Stroop Test (Williams et al., 1996) did not. Additionally, Vázquez et al. (2008) found low levels of positive implicit self-esteem in the patient sample, who remembered less positive self-descriptive words than controls, whereas no difference was found for negative self-descriptive words.

Both Moritz et al. (2006) and McKay et al. (2007) assessed explicit and implicit self-esteem in patients with delusions. However, Vázquez et al. (2008) extended those results by comparing z-transformed levels of explicit and implicit self-esteem in order to directly assess the hypothesized discrepancy between the two self-esteem measures. No discrepancy was found for acute deluded and remitted patients, but, surprisingly, the healthy and depressed controls revealed the discrepancy: healthy controls showed higher explicit than implicit self-esteem, while depressed controls revealed the converse pattern.

Differences between previous findings in explicit and implicit self-esteem may result from small sample sizes ($n<17$ for each group in Bentall and Kaney, 1989; Kinderman, 1994; Lyon et al., 1994; Moritz et al., 2006; McKay et al., 2007) or inhomogeneous samples (samples of patients with different psychotic disorders, e.g. McKay et al., 2007). Additionally, as earlier studies (Bentall and Kaney, 1989; Fear, 1996) assessed implicit self-esteem using an uncomputerized measure for reaction times (Emotional Stroop Test, Williams et al., 1996), the reliability for these assessments might be questionable. Finally, although the reliability of the Self-Referent Incidental Recall Task (SRIRT, Dent and Teasdale, 1988), which was used as an implicit measure for self-esteem in the study by Vázquez et al. (2008), has been demonstrated (Cronbach's alpha: $r=0.80$), its validity is still questionable.

Due to the small studies and the inconsistent results, explicit and implicit self-esteem and their discrepancy will be assessed in a larger and more homogenous sample of paranoid patients in this study. Their levels of self-esteem will be compared to those of healthy and depressed controls using measures with good psychometric properties. In accordance with the majority of the previous results, we hypothesize that (1) patients with delusions will show low explicit self-esteem when compared to healthy controls. In line with Bentall et al. (1994, 2001), we assume that (2) the patients with delusions will show low implicit self-esteem and (3) reveal lower levels of implicit than explicit self-esteem. No discrepancy between explicit and implicit levels is expected for healthy and depressed individuals. To assess whether levels of self-esteem are linked to the acuteness of symptoms, self-esteem will be assessed in acute deluded and remitted patients separately.

2. Methods

2.1. Participants

The total sample ($n=139$) consists of an acute deluded group (AD; $n=28$), a remitted deluded group (RD, $n=31$), a healthy control group (HC, $n=59$) and a depressed control group (DC, $n=21$). Sociodemographic variables of the four groups and statistics for group comparisons are depicted in Table 1.

The acute and remitted deluded patients were diagnosed with schizophrenia according to the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV, APA, 1994) or the International Classification of Mental Disease (ICD-10, Dilling et al., 2000). Diagnoses were based on the Structured Clinical Interview for DSM-IV (SCID, Wittchen et al., 1997) or the International Checklist for ICD-10 (Janca and Hiller, 1996). For all patients, persecutory delusions were the most relevant delusions they were experiencing. Depending on the extent of persecutory delusions (P6 item of the Positive and Negative Syndrome Scale (PANSS), Kay et al., 1987), patients were divided into an acute deluded ($P6\geq 4$, $n=28$, AD) and a remitted ($P6\leq 3$, $n=31$, RD) group. All deluded patients, except two, were receiving antipsychotic medication at the time of assessment. The mean chlorpromazine equivalent dose was 789.23 (S.D. = 806.13). Patients were recruited in a psychological outpatient department in Marburg/Germany ($n=34$) and in acute psychiatric inpatient settings ($n=25$) in Marburg, Haina, Werneck and Marienheide. Inclusion criteria were sufficient German language skills to complete the assessment, age between 16 and 69, diagnoses of schizophrenia and no prevalent diagnosis of dementia, substance abuse or brain organic disorder. The healthy control group (HC, $n=59$) was recruited via advertisements and selected to match the deluded groups in age, gender and educational status. Individuals with any current diagnosis of mental disorder or substance abuse and with a lifetime diagnosis of schizophrenia were excluded using the short version of the SCID for assessment. The depressed control group (DC, $n=21$) consists of patients diagnosed with a depressive disorder according to ICD-10 (Dilling et al., 2000). Diagnoses were based on the computerized version of the Composite International Diagnostic Interview (CIDI, World Health Organization, 1990). Patients were recruited in an inpatient setting in Lindow/Germany. The four groups differed in age, with the depressed controls being significantly older than the other three groups (AD, RD, and HC). Thus, we controlled for age in the following analyses. No differences among the groups were found for gender and educational status.

The study was approved by the national ethics committee of the German Society for Psychology. All participants gave written informed consent prior to the assessment. The samples used in this study partly overlap with the samples used in a study by Mehl et al. (2010) who assessed associations between explicit and implicit attributions and self-esteem in 41 patients with delusions and 21 healthy controls.

Table 1
Sociodemographic variables and symptom scores of acute deluded (AD), remitted deluded (RD), healthy (HC), and depressed (DC) participants.

Groups	AD ($n=28$)	RD ($n=31$)	HC ($n=59$)	DC ($n=21$)	Test-statistics	Post hoc
Mean age in years (S.D.)	34.64 (11.26)	32.00 (9.70)	35.15 (11.63)	46.75 (8.12)	$F=8.43$; d.f. = 3; 137, $P<0.001$;	DC>AD, $P=0.001$; DC>RD, HC, $P<0.001$
Female (%)	35.7	35.5	33.9	66.7	$\chi^2=7.63$; d.f. = 3, $P=0.054$	
Educational status[a] (S.D.)	2.75 (0.80)	3.13 (0.76)	3.08 (0.82)	2.90 (0.54)	BF [b] = 1.68; d.f. = 3, 115.04; $P=1.49$	
PANSS P6 score (S.D.)	4.64 (0.78)	2.32 (0.75)	–	–	$t=11.64$; d.f. = 57, $P<0.001$	
PANSS positive score (S.D.)	19.93 (3.79)	13.55 (3.76)	–	–	$t=6.49$; d.f. = 57, $P<0.001$	
PANSS negative score (S.D.)	17.46 (4.61)	13.97 (4.29)	–	–	$t=3.02$; d.f. = 57, $P=0.004$	
Paranoia Checklist/frequency scale (S.D.)	46.05 (15.84)	29.30 (8.09)	24.91 (10.58)	28.67 (13.62)	BF[b] = 14.73; d.f. = 3; 66.36, $P<0.001$	AD>RD, HC, DC (all $P<0.001$)
BDI total score (S.D.)	17.42 (10.54)	16.45 (9.23)	–	20.57 (10.21)	$F=1.12$; d.f. = 2, 77, $P=0.33$	

Note: PANSS = Positive and Negative Syndrome Scale; BDI = Beck Depression Inventory.
[a] Educational status: 0 = no school leaving certificate; 1 = elementary school; 2 = secondary school; 3 = high school graduate.
[b] BF = Brown–Forsythe correction.

2.2. Measures

2.2.1. Measures of symptomatology

2.2.1.1. Positive and Negative Syndrome Scale (PANSS, Kay et al., 1987). The PANSS (Kay et al., 1987) is a semi-structured interview for assessment of positive symptoms (7 items, including persecutory delusions), negative symptoms (7 items) and general symptomatology (18 items) in patients with schizophrenia. Interviews with outpatients were videotaped and symptoms were rated on a 7-point Likert Scale by two independent raters who were certified by the PANSS-Institute. In case of rating differences, a consensus rating was reached. Interrater reliability (intraclass correlations, ICCs) in our study was $r=0.86$ for overall symptomatology, $r=0.90$ for positive symptoms, and $r=0.73$ for persecutory delusions.

2.2.1.2. Paranoia Checklist (Freeman et al., 2005). The Paranoia Checklist is an 18-item questionnaire that assesses frequency, distress and conviction of paranoid beliefs on a 5-point Likert Scale. The German version has good internal consistency (Cronbach's alpha 0.86) and good convergent validity (Lincoln et al., 2008).

2.2.1.3. Beck Depression Inventory (BDI, Beck and Steer, 1984). Depression was assessed in deluded and depressed patients using the BDI, which is a widely used 21-item self-report measure for depression. The German translation by Hautzinger et al. (1995) has well established psychometric properties (Cronbach's alpha 0.88).

2.2.2. Measures of self-esteem

2.2.2.1. Rosenberg-Self-Esteem Scale (RSE, Rosenberg, 1965). The RSE, a 10-item questionnaire, was used as an explicit measure of global self-esteem. Participants were asked to rate self-related statements on a 4-point Likert Scale to the degree of endorsement, whereas higher scores indicate higher self-esteem. Good psychometric properties for the German version were confirmed (von Collani and Herzberg, 2003).

2.2.2.2. Implicit Association Test (IAT, Greenwald et al., 1998; Greenwald and Farnham, 2000). Implicit self-esteem was assessed using the IAT, which is a computerized reaction time task measuring associations between self-relevant and non-self-relevant concepts with positive and negative attributions. It is assumed that self-relevant concepts and positive associations are easily attributed in people with high self-esteem, whereas the reaction time is slowed by the combination of self-relevant concepts and negative attributions. Bosson et al. (2000) report good reliability and sufficient discriminant validity and conclude that the IAT is the best implicit measure for self-esteem.

In this task, a target word appears in the centre of the computer screen, while categories appear on its left and right. The participants are asked to classify target words quickly to their correct category by pressing one of two (left vs. right) corresponding keys on the keypad. The categories and corresponding words used in this IAT were presented to the participants in advance and were as follows (corresponding words in brackets): self (I, my, me, and participant's first name), other (you, her, they, and first name of the other person), positive (good, clever, marvelous, and popular), negative (bad, stupid, disgusting, and terrible), flowers (carnation, rose, tulip, and flower), insects (beetle, fly, caterpillar, and insect).

The IAT consists of 7 practice blocks (blocks 1–6 and block 9) and two main conditions with two blocks each (blocks 7, 8, 10, and 11). To practice the classification task, one category appears on the left and the right of the screen, while the participant is asked to classify flowers and insects (block 1: 80 trials), positive and negative adjectives (block 2: 20 trials; block 6: 20 trials; block 7: 40 trials) and self- and other-related words (block 5: 20 trials) to their associated category. Classifying the target word to one of the four categories was practiced in blocks 3 (20 trials) and 4 (40 trials), where the categories "flowers" and "positive" appear on the right side of the screen and share the right key to classify each target word to its associated category, while the categories "insects" and "negative" are depicted on the left side and share the left key. In the compatible blocks (block 7: 20 trials; block 8: 40 trials) of the main condition, the categories "self" and "positive" appear on the right, while the categories "other" and "negative" appear on the left side of the computer screen. In the incompatible condition (block 10: 20 trials; block 11: 40 trials), the categories "self" and "negative" are depicted on the right and the categories "other" and "positive" are depicted on the left. Again, the categories that are depicted together share the same response key.

To control for effect of block order, 50% of the participants worked on the compatible condition before doing the incompatible condition, while the other half started with the incompatible condition. The IAT-effect is defined as the speed difference between incompatible and compatible conditions with a small difference (small IAT-effect) indicating low implicit self-esteem. The D-measure, an improved algorithm proposed and evaluated by Greenwald et al. (2003), was used to compute the IAT-effect: all four blocks of the two main conditions (compatible blocks 7 and 8 and incompatible blocks 10 and 11) were included. First, trials with latencies above 10,000 ms were eliminated. One pooled standard deviation was calculated for the first (blocks 7 and 10) and for the second (blocks 8 and 11) incompatible and compatible blocks. Error latencies were replaced by the block's mean + 600 ms. Difference scores between the mean reaction time of blocks 7 and 10 and blocks 8 and 11 were calculated. Both difference scores were divided by their associated pooled standard deviations. The two quotients were averaged. According to Greenwald et al. (2003), the new D-measure is advantageous when compared to previous measures of the IAT-effect as it is highly resistant to response-speed differences.

2.2.3. Measures of speed performance

2.2.3.1. Trail Making Test-A (TMT-A, Reitan, 1955). The Trail Making Test-A was used for assessment of speed performance. In this test, the participant is asked to quickly connect numerics ranging from 1 to 25 in the correct order. The reaction time was used as the outcome variable.

2.3. Statistical analysis

Data were analysed with SPSS for Windows (Version 17). Differences between sociodemographic variables, clinical data and levels of self-esteem among groups were tested using ANOVAs and ANCOVAs. Brown–Forsythe correction was used when variances were not homogenous. Independent post hoc tests (two-tailed) were calculated for further analysis of means. Bonferroni correction was used when variances were equal. Games–Howell correction was used when variances were statistically different. To test for differences between levels of explicit and implicit self-esteem, scores on explicit and implicit self-esteem were standardized and MANOVAs and paired post hoc tests were performed.

3. Results

3.1. Clinical status

Symptom scores of the acute deluded, remitted, and depressed groups are depicted in Table 1. As expected, independent-samples *t*-tests revealed that the acute and remitted groups significantly differed in their PANSS P6 paranoia score, PANSS positive score, and PANSS negative score, with the acute deluded group showing higher levels of paranoia as well as more positive and negative symptoms than the remitted group. Additionally, the ANOVA of group (AD, RD, DC, and HC) on the Paranoia Checklist frequency scale revealed significant differences between groups, accounted for by the acute deluded group reporting higher frequency of paranoid delusions than the remitted patients, the depressed patients and the healthy controls. An ANOVA of group (AD, RD, and DC) on the BDI total score did not show significant differences in levels of depression between the groups.

3.2. Explicit self-esteem

Table 2 depicts the levels of self-esteem in each sample and the statistics for group comparisons. A one-way ANOVA of group (AD, RD, HC, and DC) on the RSE total score showed significant differences between groups with the healthy controls reporting higher levels of explicit self-esteem than the clinical groups, who did not differ from one another. When this analysis was repeated with age as a covariate, the results in self-esteem remained significant ($F(3, 138)=24.15$, $P<0.001$), indicating that the results were not due to differences in age.

3.3. Implicit self-esteem

3.3.1. Preanalysis of mean reaction time, error rate and effect of order

The MANOVA of group (AD, RD, HC, and DC) and condition (compatible vs. incompatible blocks) on the mean reaction time revealed the main effect of group ($F(3, 135)=7.74$, $P<0.001$) and condition ($F(1, 135)=38.17$, $P<0.001$), but no interaction effect for condition × group ($F(3, 135)=1.54$, $P=0.219$), indicating that healthy controls were overall faster than both the acute deluded and the depressed participants (both $P<0.01$). Besides that, participants had overall faster reaction times in the compatible condition than in the incompatible condition. An ANOVA of group (AD, RD, HC, and DC) on the overall error rate of the main conditions (blocks 7, 8, 10, and 11) did not show any differences between the groups. Additionally, independent-samples *t*-tests did not reveal significant differences between the D-measure of participants who did the

Table 2
Variables in self-esteem in acute deluded (AD), remitted deluded (RD), healthy (HC), and depressed (DC) participants.

Groups	AD	RD	HC	DC	Test-statistics	Post hoc
	($n=28$)	($n=31$)	($n=59$)	($n=21$)		
RSE: total score (S.D.)	18.93 (5.21)	18.29 (5.98)	25.12 (3.53)	17.57 (6.47)	BF [a] = 17.24; d.f. = 3, 79.3, $P<0.001$	HC>AC, RD, DC (all $P<0.001$)
IAT: total error rate (S.D.)	7.39 (5.45)	6.13 (6.32)	5.80 (5.49)	4.71 (4.80)	$F=0.98$; d.f. = 3, 138, $P=0.403$	
IAT: D-measure	0.50 (0.33)	0.45 (0.44)	0.60 (0.40)	0.64 (0.29)	$F=1.45$; d.f. = 3, 137, $P=0.23$	
IAT: self-D-measure	0.58 (0.34)	0.47 (0.52)	0.62 (0.53)	0.62 (0.35)	$F=0.74$; d.f. = 3, 138; $P=0.53$	
Difference scores (Z-RSE − Z-IAT)	−0.24 (1.21)	−0.23 (1.47)	0.55 (1.17)	−0.84 (1.12)	$F=7.72$, d.f. = 3, 137, $P<0.001$	HC>AD ($P=0.034$); HC>RD ($P=0.033$); HC>DC ($P<0.001$)

Note: RSE = Rosenberg Self-Esteem Scale; IAT = Implicit Association Test.
[a] BF: Brown–Forsythe.

compatible condition first and those who did the incompatible condition first (full sample as well as each group separately: $P<0.05$).

3.3.2. Analysis of IAT-effect

The one-way ANOVA of group (AD, RD, HC, and DC) on the D-measure of the IAT did not reveal any differences between groups, indicating that the acute deluded, remitted, depressed, and healthy participants did not differ in their levels of implicit self-esteem. To ensure that the implicit measure of self-esteem was unaffected by the associations of other people (category "other") with negative attributions (category "negative"), the D-measure was recalculated for self-relevant associations by using only the associations of "self" and "positive" in the compatible blocks as well as the associations of "self" and "negative" in the incompatible blocks. A one-way ANOVA on the self-D-measure yielded no differences among groups. Results in implicit self-esteem remained unchanged when age was entered as a covariate (D-measure $F(3, 136)=1.18$, $P=0.333$; self-D-measure $F(3, 138)=1.13$, $P=0.34$).

Finally, using correlation analysis, we assessed whether the results in the implicit self-esteem measure were unaffected by speed performance or antipsychotic medication. While reaction times in the TMT-A were associated with slowed reaction times in the IAT ($r=0.43$, $p<0.001$), they were not correlated with the D-measure ($r=0.09$, $p=0.32$). Additionally, chlorpromazine equivalence doses in the schizophrenic sample ($n=59$) were neither significantly correlated with the mean IAT reaction time in the four blocks nor with the D-measure ($r=0.01$, $P=0.94$ and $r=0.13$, $P=0.32$, respectively).

3.4. Discrepancies between explicit and implicit self-esteem

To compare explicit and implicit levels of self-esteem, RSE total scores and IAT-D-measure-scores were z-standardized. Fig. 1 presents z-scores of explicit and implicit self-esteem for each group separately.

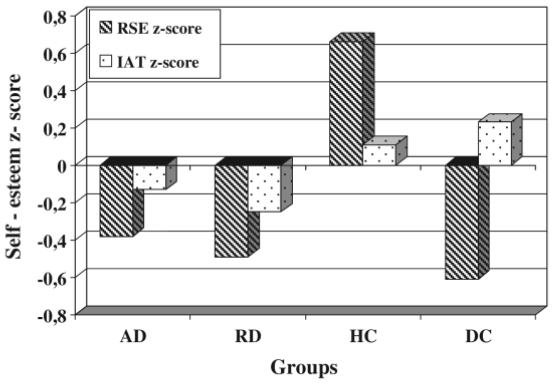

Fig. 1. Explicit and implicit self-esteem in acute deluded (AD), remitted deluded (RD), healthy (HC), and depressed (DC) participants.

The MANOVA of group (AD, RD, HC, and DC) and measure (explicit/implicit) on z-self-esteem scores revealed a significant effect of group ($F(3, 134)=11.27$, $P<0.001$) indicating overall higher self-esteem in the healthy controls than in the other three groups (AD and RD: $P<0.001$, DC: $P=0.007$). There was no significant effect of measure ($F(1, 134)=2.95$, $P=0.09$), but there was a significant interaction effect for measure × group ($F(3, 134)=7.72$, $P<0.001$). Paired samples *t*-tests showed significant differences between explicit and implicit self-esteem in both the healthy and the depressed control group (HC: $T(57)=3.58$, $P=0.001$; DC: $T(20)=-3.44$, $P=0.003$). Whereas healthy controls showed significantly higher explicit than implicit self-esteem, the converse pattern was found for depressed controls. Contrary to our hypothesis, differences between levels of explicit and implicit self-esteem were neither found in the acute deluded nor in the remitted group (AD: $T(28)=-1.12$, $P=0.274$; RD: $T(30)=-0.88$, $P=0.386$).

To examine whether the groups differed in their discrepancy scores, z-scores in implicit self-esteem were subtracted from z-scores in explicit self-esteem. Thus, positive scores indicate higher explicit than implicit self-esteem. An ANOVA of group (AD, RD, HC, and DC) on the discrepancy scores revealed a significant effect of group, with the healthy controls showing significantly higher discrepancy scores than the three clinical groups, who did not differ significantly from each other (all $P>0.001$).

4. Discussion

The aim of this study was to systematically test the hypothesis that persecutory delusions in patients with schizophrenia may serve to improve their underlying low self-esteem. In accord with our first hypothesis and consistent with the majority of other studies investigating explicit self-esteem (Moritz et al., 2006; McKay et al., 2007; Merrin et al., 2007; Vázquez et al., 2008; Combs et al., 2009; Moritz et al., 2010) we found low levels of explicit self-esteem in patients with paranoia compared to healthy controls. Patients with delusions revealed comparable levels of self-esteem to patients with depression (see also Moritz et al., 2006; Merrin et al., 2007). Self-esteem was also low in patients with remitted delusions (see also Freeman et al., 1998; Humphreys and Barrowclough, 2006; Bentall et al., 2008; Vázquez et al., 2008; Moritz et al., 2010). In sum, our findings on explicit self-esteem fit into the body of findings that demonstrates that explicit self-esteem in patients with delusions is decreased and does not automatically improve when delusions remit.

Rather strikingly however, we found both acute deluded and remitted patients to show normal levels of implicit self-esteem compared to healthy and depressed controls. Our results disconfirm the hypothesized low implicit self-esteem in patients with delusions that was found in the two previous IAT studies (McKay et al., 2007; Moritz et al., 2006). This is a relevant finding given that our sample was larger and also more homogenous in terms of patient characteristics. Our findings are further affirmed by Vázquez et al. (2008) who also used a large sample of patients. With respect to the so-called "file-drawer-

problem" (Rosenthal, 1979), it should also be considered that additional studies presenting null-effects might have remained unpublished.

It could be claimed that the results in implicit self-esteem in the deluded group were influenced by associations of the category "other" with the adjective "negative", because patients with paranoia tend to see others as hostile or dangerous. However, when solely the associations of the category "self" with positive and negative self-descriptive words were used for the calculation of the D-measure, the results remained unchanged and no differences between groups were revealed. The fact, that the D-measure remains unaffected by the associations of the category "other" with the adjective "negative" was also demonstrated for healthy individuals (Pinter and Greenwald, 2005) and patients with paranoia (McKay et al., 2007).

Support for the notion that implicit self-esteem is not generally impaired in psychosis also comes from studies that found normal levels of implicit self-esteem in patients with grandiose delusions (Smith et al., 2005) and late-onset psychosis (McCulloch et al., 2006). Our finding of normal implicit self-esteem in patients with depression is counter-intuitive, but in line with the findings by De Raedt et al. (2006) who assumed the IAT to measure early learnt but remaining underlying positive self-schemata in patients with depression.

The methodology in our study extended on the methods employed by McKay et al. (2007) and Moritz et al. (2006). Although these studies also assessed explicit self-esteem using the RSE (Rosenberg, 1965) and implicit self-esteem using the IAT (Greenwald et al., 1998; Greenwald and Farnham, 2000) we assessed the discrepancy between implicit and explicit self-esteem directly. This direct comparison of z-transformed levels of explicit and implicit self-esteem – which we consider to be the best method to test the discrepancy – demonstrated, that neither the acute deluded nor the remitted patients were characterized by a discrepancy between explicit and implicit self-esteem. Thus, we disconfirmed the hypothesis that patients with delusions have higher explicit than implicit self-esteem and were able to replicate and extend the findings of the study by Vázquez et al. (2008) who also used z-transformation for the comparison of explicit and implicit self-esteem. Surprisingly, but also in line with Vázquez et al. (2008), we found a discrepancy between explicit and implicit self-esteem for the healthy controls, whose implicit self-esteem was lower than their explicit self-esteem. One might even conclude that it is healthy or protective to describe oneself in a more positive manner than oneself implicitly feels. This explanation is speculative but might explain why the discrepancy was not found for the deluded group.

In sum, our results clearly oppose the hypothesis that delusions serve to enhance self-esteem (Bentall et al., 2001; Bentall et al., 1994) as we found (1) low rather than normal or elevated explicit self-esteem, (2) normal implicit self-esteem, and (3) no discrepancy between levels of explicit and implicit self-esteem in the patient sample. Nevertheless, this does not imply that delusions are not connected to self-esteem at all. Particularly, it is noteworthy that the patients with delusions in our study revealed levels of self-esteem that were as low as those of patients with depression, for which loss of self-esteem is a core feature.

Whereas a single assessment only sheds light on the momentary level of self-esteem, multiple reassessments of delusions, explicit and implicit self-esteem and the discrepancy would be informative to understand whether self-esteem triggers paranoid delusions or vice versa. Using the experience sampling method, Thewissen et al. (2008) found fluctuation in self-esteem to predict paranoia. In this study, loss of self-esteem was followed by an increase in paranoia. This clearly speaks for a causal role of self-esteem in paranoia and supports the model of persecutory delusions put forward by Freeman et al. (2002) which postulates negative beliefs about the self to influence the formation of delusions. Faced with an ambiguous situation that is perceived as self-threatening, patients may tend to react with an increase in paranoia. Thus, the delusion arises from attempts to quickly make sense of ambiguous, self-threatening situations by interpreting situations consistently with self-image (e.g. weak and vulnerable) and the negative view of others (Fowler et al., 2006).

So far, it has not been investigated how a decrease in self-esteem is triggered and why some people react with an increase in paranoia while others do not. As experimental designs have shown that an increase in paranoia under stress is mediated by anxiety (Lincoln et al., 2008) and that the association between anxiety and paranoia is moderated by a tendency to jump to conclusions (Lincoln et al., 2009), it would be interesting to assess, whether self-threatening situations (e.g. negative feedback) lead to a decrease in self-esteem and to an increase in paranoia in individuals with high vulnerability.

It has also been demonstrated that low self-esteem in schizophrenia patients does not improve even after symptom improvement due to neuroleptic treatment (Moritz et al., 2010). Also, Kuipers et al. (2006) argue that the negative self-evaluations not only impact on the formation of paranoia but that the delusions additionally confirm and consolidate the negative self-evaluations. Thus, as delusional thoughts might reflect one's own self-image (unprotected, exposed to others, and helpless) during the acute status of psychosis, the consolidated low self-esteem remains even after delusions remit. Furthermore, the awareness of having a mental disorder (Drake et al., 2004) and the stigmatization associated with it (Ritsher and Phelan, 2004) are likely to undermine any attempts of improving self-esteem in the recovery process of psychosis.

4.1. Limitations

Despite of the multiple advantages of the IAT with regard to its psychometric properties, there might be validity constraints to measuring implicit associations in patients with schizophrenia as schizophrenia often goes along with cognitive impairment or slowed reaction times (Mohamed et al., 1999). Although the new D-measure (Greenwald et al., 2003) takes interindividual differences in reaction times into account by calculating difference scores, the IAT might be less reliable for comparing groups that differ substantially in their reaction times. As subclinical paranoia has also been found in healthy controls (Ellett et al., 2003) and high subclinical paranoia is associated with low explicit self-esteem (Martin and Penn, 2001; Combs and Penn, 2004), one feasible way to address this issue would be to extend previous results by assessing the correlation of subclinical paranoia and implicit self-esteem in healthy individuals.

4.2. Clinical issues

Self-esteem is clearly impaired in patients with delusions. Although delusions are unlikely to serve the function of maintaining self-esteem they seem to reflect the sense of inferiority and worthlessness that is characteristic of many delusional patients. Also, self-esteem does not seem to automatically recover after effective psychiatric treatment (Moritz et al., 2010). However, cognitive-behavior interventions for both individual (Hall and Tarrier, 2003) and group therapies (Laithwaite et al., 2007) have been demonstrated to improve self-esteem in patients with delusions. Several newly emerging interventions for psychosis even lay a clear focus on enhancing self-esteem. For example, Laithwaite et al. (2009) found compassion focused therapy that focuses on developing compassion towards self to be effective in patients with psychosis. Furthermore, loving kindness-mediation, an approach, that also focuses on developing a positive attitude towards self and others was adopted for patients with negative symptoms of schizophrenia (Johnson et al., 2009), but needs further empirical support.

Future research should further develop interventions aimed at improving self-esteem. If individuals with psychosis learn to improve their self-esteem, they might feel less helpless and threatened when they face ambiguous or self-threatening situations. Interventions

could also focus on learning to react to self-threat in a healthier manner, such as being self-soothing or seeking social support.

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Anhang B: Artikel 2

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The impact of social stress on self-esteem and paranoid ideation

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ABSTRACT

Background: Vulnerability-stress models propose that social stress triggers psychotic episodes in high risk individuals. Previous studies found not only stress but also a decrease in self-esteem to precede the formation of delusions. As evidence for causal conclusions has not been provided yet, the present study assessed the direct impact of social stress on paranoid beliefs using an experimental design and considered a decrease in self-esteem as a mediator and the proneness to psychosis and paranoia as moderators of the effect.
Methods: A nonclinical population sample ($n = 76$) was randomly assigned to an experimental (EG) or a control group condition (CG). In the EG, participants were excluded during a virtual ball game (Cyberball) by the other two players and received a negative feedback after performing a test. The CG was included in the game and received a neutral feedback. Before and after the experimental conditions, emotions, self-esteem and paranoid beliefs were assessed using state-adapted questionnaires.
Results: After the social stress induction, the EG reported a higher increase in subclinical paranoid beliefs compared to the CG. The impact of social stress on paranoid ideation was mediated by a decrease in self-esteem and moderated by proneness to paranoia. Individuals who felt distressed by paranoid thoughts at baseline were more likely to react with an increase in paranoid ideation under social stress.
Limitations: The results need to be confirmed in a patient sample to draw conclusions about the processes involved in the formation of delusions in clinically relevant stages.
Conclusions: The impact of social stress on symptom formation and self-esteem is discussed in terms of recent models of symptom formation and interventions in psychosis.

1. Introduction

The vulnerability–stress model proposes that stressful life-events triggers psychotic episodes in high risk individuals (Nuechterlein & Dawson, 1984). In particular, the hypothesis that social stress is relevant to the development of psychotic episodes (Lukoff, Snyder, Ventura, & Nuechterlein, 1984) has lately gained preliminary evidence from studies investigating the interaction of molecular genetic mechanisms and psychosocial stressors (van Winkel, Stefanis, & Myin-Germeys, 2008).

In their heuristic model, Preti and Cella (2010) propose both ostracism and public discredit to be stressors that elicit negative emotions and precede the formation of delusions. The importance of ostracism or social exclusion in psychosis has been emphasized in studies that found a higher percentage of psychotic symptoms in individuals with a history of discrimination (Janssen et al., 2003) or migration (Cantor-Graae & Selten, 2005). In addition, it has been shown that high expressed emotion (EE), characterized by emotional over-involvement, criticism and hostility (Magaña et al., 1986) in the patients' families is perceived as stressful by persons with schizophrenia (Cutting, Aakre, & Docherty, 2006) and is associated with relapse (Butzlaff & Hooley, 1998).

Social stress has also been shown to impact on self-esteem in patients with psychosis as greater stigmatization was found to be related to a greater loss of self-esteem (Lysaker, Tsai, Yanos, & Roe, 2008). The long-term consequences of stigmatization have been emphasized by Ritsher and Phelan (2004) who found the stigma of having a mental disorder, especially the feeling of being alienated, to be associated with lower self-esteem at four month follow up.

Over and above the impact of social stress on self-esteem, numerous studies point to a general impairment in self-esteem in patients with persecutory delusions (Lincoln, Mehl, et al., 2010; Moritz, Werner, & von Collani, 2006; Vázquez, Diez-Alegría, Hernández-Lloreda, & Moreno, 2008), even in those whose delusions are remitted (Kesting, Mehl, Rief, Lindenmeyer, & Lincoln,

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2011). In line with the continuum hypothesis of psychotic symptoms (Johns & van Os, 2001), low self-esteem is also strongly associated with paranoid ideation in the general population (e.g. Ellett, Lopes, & Chadwick, 2003) and increases the risk of developing a psychotic episode (Krabbendam et al., 2002). It seems, therefore, that low self-esteem plays an important role in persecutory delusions both as a vulnerability and as a maintaining factor. This has also been proposed in the cognitive model of persecutory delusions by Freeman, Garety, Kuipers, Fowler, and Bebbington (2002), which postulates negative evaluations of the self, others and the world in combination with cognitive biases such as jumping to conclusions, deficits in theory of mind and attributional biases to impact on the formation of persecutory delusions, which then further confirm the negative evaluations and enhance emotional distress.

The interplay between self-esteem and delusions in everyday life has been demonstrated in an experience sampling study which found a decrease in self-esteem to predict the increase of paranoid thoughts (Thewissen, Bentall, Lecomte, Van Os, & Myin-Germeys, 2008). Given that both a decrease in self-esteem and social stress precede the increase of paranoid delusions, one could speculate that reductions in self-esteem mediate rather than directly impact on symptom increase. Social stressors might activate negative self-evaluations to which patients react with an increase in paranoia. The delusional interpretations could arise from attempts to make sense of ambiguous, self-threatening situations by interpreting situations consistently with the negative self-image and the negative view of others (Fowler et al., 2006). Evidence for a mediating role of self-esteem comes from a study by Barrowclough et al. (2003). They found that the impact of the families' criticism on the patients' positive symptoms was mediated by the patients' negative self-evaluation. However, the interpretation of the findings by Barrowclough et al. (2003) and Thewissen et al. (2008, 2007) is limited by the fact that they did not experimentally manipulate the stressors or levels of self-esteem and thus do not allow definite causal conclusions.

In accordance with the notion that both social exclusion and criticism are relevant social stressors in paranoia, we used an experimental design to assess the impact of both types of social stressors on paranoid ideation and self-esteem. Building on the continuum of paranoid ideation in the population which is well-studied (Freeman, 2006), we conducted our study in a nonclinical population. This is advantageous as the impact of social stress on paranoid ideation can be studied without being affected by medication or impairment due to severe symptoms. We hypothesized that social stress would directly impact on paranoid ideation (Fig. 1a), and that the effect of social stress on paranoid ideation would be moderated by the proneness to positive symptoms and by the proneness to paranoia in particular (Fig. 1b). Furthermore, we hypothesized that the direct effect of social stress on paranoid ideation would be mediated by a decrease in self-esteem (Fig. 1c).

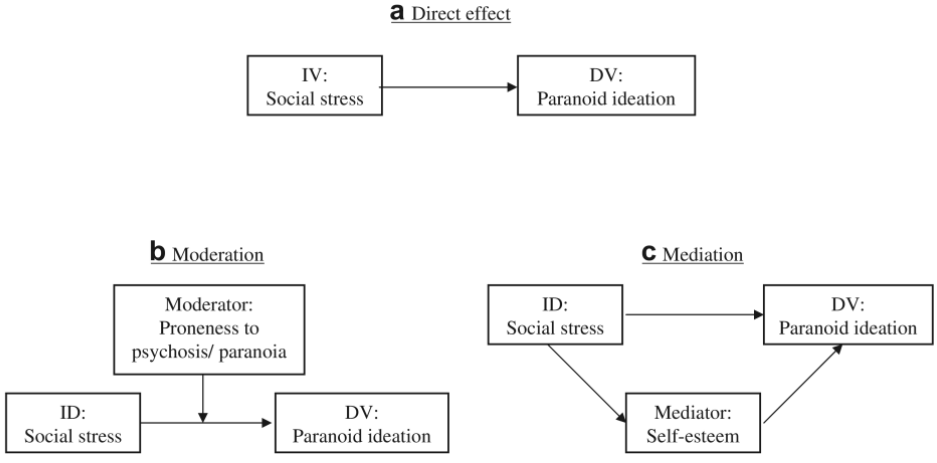
2. Methods

2.1. Participants

The total sample consisted of 82 participants from the general population with a mean age of 24.79 years ($SD = 8.35$; range 18–56). Seventy-two percent were female and 78 percent had a high school degree. Participants were recruited via advertisements. They were either paid for participation or were able to take part in the experiment in order to complete curriculum requirements for their study at the university.

2.2. Social stress induction

Social stress was induced using both a social exclusion and a criticism paradigm. To induce social exclusion, we used Cyberball (Williams, Cheung, & Choi, 2000), a well established experimental paradigm in which the participants played a ball tossing game over the internet with two virtual other players. Each tossing game consisted of 30 ball throws. The experimental group (EG) was excluded by receiving only two ball throws at the beginning of the game and being excluded thereafter (social stress condition), whereas the control group (CG) was included and received 33% of the ball throws (non-social stress condition). After the Cyberball game, the participants were asked to indicate the number of balls they received and how much they felt integrated during the game ball (from 1 "not" to 10 "very"). The web site was written in Hypertext Markup Language (HTML). The software was written in



Note: ID: independent variable; DV: dependent variable.

Fig. 1. Graphical depiction of the hypotheses.

Perl. Graphics and animations were created in Graphics Interface Format (GIF).

To operationalize the reception of criticism, we used a task–feedback paradigm. The task involved describing the abstract meaning of five common proverbs. After a 15 min break, the participants received feedback in form of three written and two oral comments, which were negative for the EG and neutral for the CG. The sentences used for the negative and neutral feedback were comparable in structure and length.

2.3. Instruments

2.3.1. Psychotic symptoms

The Community Assessment of Psychic Experiences (CAPE, Stefanis et al., 2002) is a 42-item self-report instrument that assesses positive and negative dimensions of lifetime psychosis and symptoms of depression on a 4-point Likert Scale. The CAPE has been validated in the general population and has good discriminant validity (Stefanis et al., 2002) and good reliability (Konings, Bak, Hanssen, van Os, & Krabbendam, 2006). The positive symptom scale of the CAPE (including items concerning suspicious thoughts, delusional thoughts of reference, delusions of grandeur, hallucinations etc.) served as an index of baseline proneness to positive symptoms.

Subclinical paranoia was assessed using the Paranoia Checklist (Freeman et al., 2005) which comprises 18 items, each rated on a 5-point Likert Scale for frequency, distress, and degree of conviction. Before and after the experimental condition, the participants were asked to indicate how much they agree with the statements "at the moment". The sum score of the state adapted frequency scale was used as an index of state paranoid ideation. In addition, the sum scores of the frequency, distress and conviction scale as assessed before the experimental condition were used as indicators of baseline proneness to paranoia. The state-adapted German version has been used in other studies, in which it demonstrated good internal consistency (Cronbach's alpha .86) and good convergent validity (Lincoln, Peter, Schäfer, & Moritz, 2008).

2.3.2. Self-esteem

The Rosenberg-Self-Esteem Scale (RSE, von Collani & Herzberg, 2003) is a well established and validated 10-item questionnaire to measure global self-esteem on a 4-point Likert Scale. To assess state self-esteem before and after the social stress-induction, we used the sum score of the RSE and asked the participants how much they agree with the statements "at the moment".

2.3.3. Emotions

Participants were asked to perform intensity ratings of emotions on 10-point rating scales (from 1 = "not applicable" to 10 = "applicable"). The scales were labelled by four descriptive adjectives and were selected to capture expected emotional feelings such as shame (embarrassed/ridiculed/ashamed/ foolish), fear (frightened/timid/afraid/scared), sadness (sad/depressed/miserable/dejected), happiness (happy/gay/cheerful/delighted), and anger (angry/annoyed/mad/sore). These items have been validated in psycho-physiological studies (Lincoln et al., 2008; Stemmler, Heldmann, Pauls, & Scherer, 2001). To assess the intensity of frustration, we added the item "I am frustrated" using the same scaling. The mean score of frustration, shame, sadness, fear, and anger served as an index of "negative emotions".

2.4. Procedure and design

The experiment was conducted as a randomized repeated-measures design with two groups. Participants provided informed consent and were informed that they could discontinue the experiment at any time. Participants were then randomized to the EG or CG using the educational level (elementary school, secondary school, high school graduation) as a stratification factor. The assessment was fully computer based.

At baseline, participants were assessed with regard to their proneness to psychotic symptoms, emotions, state paranoid ideation, and state self-esteem. Participants in the EG were excluded during the Cyberball game and received a negative feedback after the proverb-task. Participants in the CG were included in the game and received a neutral feedback. In both conditions, half of the participants completed the proverb-task first, played Cyberball and received the feedback on the proverb-task afterwards. The other half played Cyberball, completed the proverb-task and received the feedback afterwards. Participants were reassessed with regard to emotions between the two social stress inductions (between assessment) and with regard to emotions, subclinical paranoia and self-esteem after the two experimental conditions (post assessment).

After the experiment, the participants were asked whether they had guessed the purpose of the experiment and were then fully debriefed. The experimenter made sure that the participants were not distressed when they left the experiment and offered them the opportunity to contact him or her in case of later distress due to the experiment.

2.5. Statistical analysis

The data were analysed using SPSS Statistics 17. Independent sample *t*-tests (two-tailed) were used for group comparisons of all variables at baseline. We then tested the overall effect of social stress on negative emotions from baseline to post assessment using repeated measures ANOVA and post hoc tests. To test the direct effect of the social stressors on paranoid ideation, we also carried out a repeated measures ANOVA.

Changes in paranoid ideation and self-esteem – as used for testing the moderating or mediating hypotheses – were defined as the difference between the post test and the baseline sum score of the Paranoia Checklist (frequency scale) (Freeman et al., 2005) and the RSE (von Collani & Herzberg, 2003), respectively. Positive difference-scores indicate an increase from baseline to post test.

To test the moderation effect, all predictors were centred round the grand mean by subtracting the mean value from each case before conducting multiple regression analyses. To interpret the moderating effect, we used the Johnson–Neyman method (Johnson & Fay, 1950) with a script provided by Hayes and Matthes (2009). This method derives the point or points of the moderator (proneness to psychosis/paranoia) where the effect of the focal predictor (social stress condition) on the dependent variable (changes in state paranoid ideation) changes from significant (alpha $< .05$) to non-significant (or vice versa) and thus derives the range of values of the moderator where the focal predictor has a significantly effect on the dependent variable.

A mediation occurs when four conditions are met: (1) the independent variable (IV) significantly affects the dependent variable (DV), (2) the IV affects the mediator, (3) the mediator affects the DV while controlling for the effect of the IV, and (4) the direct effect of the IV on the DV decreases when the mediator is included into the equation (Muller, Judd, & Yzerbyt, 2005). We tested these four conditions using simple and multiple regression analyses. We then formally tested the mediating effect using the bootstrapping method (Shrout & Bolger, 2002) with a script provided by Preacher and Hayes (2008). The bootstrapping method estimates the indirect effect of the mediator. By repeatedly resampling from the data set (1000 bootstrap resamples), an approximated distribution of the

Table 1
Means (and standard deviations) of experimental group (EG) and control group (CG) at baseline and post assessment.

Variables	Baseline assessment		Post assessment	
	EG	CG	EG	CG
Sum of negative emotions	2.21 (1.36)	2.46 (1.41)	2.98 (1.89)	1.76 (.98)
RSE sum score	32.73 (3.68)	31.94 (4.50)	32.24 (4.76)	33.11 (4.57)
Paranoia Checklist frequency sum score	27.34 (7.99)	29.29 (10.74)	30.90 (11.66)	27.83 (9.97)

Note: RSE: Rosenberg Self-Esteem Scale.

indirect effect emerges. Confidence intervals were derived by sorting the estimated values of the indirect effect.

All predictors were normally distributed (skewness $< |2|$, kurtosis $< |7|$, guidelines by Curran, West, & Finch, 1996). Data inspection at baseline assessment revealed no outliers.

3. Results

3.1. Sample characteristics at baseline

Of the 82 participants who entered the study, two participants in the EG and four participants in the CG were excluded from the analyses for the following reasons: one participant refused to take part in the task–feedback-paradigm, one person reported anger about incidental noise that he assumed to be the experimental condition; four participants correctly guessed that the study investigated delusions.

The mean CAPE scores for the positive, negative, and depression dimensions in the remaining 76 participants were 1.56 ($SD = .32$), 1.96 ($SD = .28$), 1.88 ($SD = .37$) respectively. The mean RSE sum score was 32.37 ($SD = 4.07$) and the mean Paranoia Scale sum score was 28.24 ($SD = 9.34$) for frequency of subclinical paranoia, 29.86 ($SD = 10.16$) for conviction, and 33.75 ($SD = 16.49$) for distress associated with paranoid thoughts. The EG ($n = 40$) and the CG ($n = 36$) did not differ in age and gender (both $P \geq .30$).

3.2. Manipulation check

The repeated measures ANOVA with negative emotions (time: baseline, post assessment) as within subject factor and experimental group (EG, CG) as between subject factor revealed no main effect of time ($F(1, 74) = .28$, $P = .60$) and group ($F(1, 74) = 2.92$, $P = .092$), but a significant interaction effect group × time ($F(1, 74) = 16.83$, $P < .001$). Post hoc tests demonstrated that the EG and CG did not differ in negative emotions at baseline ($P = .44$), but at reassessment ($P = .01$) with the EG reporting more negative emotions than the CG (Table 1). Also, independent t-tests showed that the EG reported having received less ball throws and feeling less integrated during the tossing game than the CG (all $P < .001$). Therefore, the social stress induction was considered as successful.

In addition, an ANOVA with group (EG, CG) and order of social stress induction (exclusion first, criticism first) as independent variables and negative emotions at reassessment as dependent variable revealed no main effect of order ($F(1, 72) = .81$, $P = .370$) and no interaction effect (group × order) ($F(1, 72) = 1.00$, $P = .320$). This indicates that the level of negative emotions was independent of the order of social stress induction. Therefore, the order of social stress was not included in the following analyses.

3.3. Direct effect of social stress on subclinical paranoia

The sum score of the Paranoia Checklist frequency scale and RSE sum score at baseline and post assessment are depicted in Table 1 for each group separately. To test the direct effect of social stress on state-paranoid ideation, we carried out a repeated measure ANOVA with state-paranoid ideation (time: baseline, post assessment) as within subject factor and the experimental group (EG, CG) as between subject factor. We found no main effect for group ($F(1, 74) = .24$, $P = .627$) or time ($F(1, 74) = 1.69$, $P = .198$). However, there was a significant group × time interaction ($F(1, 74) = 8.48$, $P = .005$), indicating a direct effect of the experimental group on paranoid ideation with a stronger increase in paranoid ideation in the EG compared to the CG.

3.4. Moderating effect of symptom-proneness

To assess whether the effect of social stress on subclinical paranoia is moderated by the proneness to positive symptoms, we performed a multiple regression analysis using the social stress condition, the CAPE positive score and the interaction term of group × CAPE positive score as predictors and the difference-score of state paranoid ideation as dependent variable (Table 2). Although the model was significant in predicting paranoid ideation ($R^2 = .12$, $F(3, 72) = 3.45$, $P = .024$), the CAPE positive score and the interaction term did not significantly contribute to predict paranoid ideation, indicating no direct or moderating effect of the proneness to positive symptoms.

To investigate whether the effect of social stress on subclinical paranoia is moderated by the proneness to different aspects of paranoia, we performed three multiple regression analyses with the social stress condition, the mean frequency/distress/or conviction score of the Paranoia Checklist at baseline and the interaction term of group × frequency/distress/or conviction as predictors and the difference-score of state paranoid ideation as dependent variable (Table 2). The alpha level was adjusted to alpha = .050/3 = .017 in order to avoid alpha inflation. The R^2

Table 2
Simple and multiple regression analyses to test the moderating and mediating factors on paranoid ideation.

Regression	Mediating condition	Dependent variable	Predictor(s)	β^a	t	p
Multiple regression to test the moderation (1)	–	Paranoid ideation (Δ)	Social stress	.34	3.03	.003
	–		CAPE positive score	−.14	−1.25	.217
	–		Interaction social stress × CAPE positive score	−.01	−.07	.942
Multiple regression to test the moderation (2)	–	Paranoid ideation (Δ)	Social stress	.32	3.44	.001
	–		Distress score	.47	5.03	<.001
	–		Interaction social stress × distress	.28	2.97	.004
Simple regression	(1)	Paranoid ideation (Δ)	Social stress	.32	2.91	.005
Simple regression	(2)	Self-esteem (Δ)	Social stress	−.35	−3.16	.002
Multiple regression	(4)	Paranoid ideation (Δ)	Social stress	.21	1.89	.063
	(3)		Self-esteem (Δ)	−.32	−2.82	.006

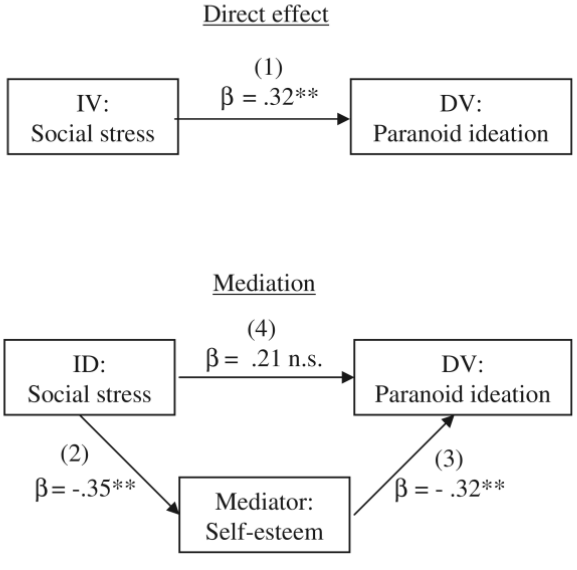
Note: (Δ) Difference-scores (post-test − baseline), CAPE: Community Assessment of Psychic Experiences.
[a] Standardized coefficient.

increase due to the interaction for group × distress was significant, and the overall model predicted paranoid ideation ($R^2 = .37$, $F(3, 72) = 14.20$, $P < .001$) with each predictor contributing significantly (Table 2). The interactions group × frequency ($P = .885$) and group × conviction ($P = .723$) were not significant. Using the Johnson–Neyman method to interpret the significant interaction group × distress, we found the effect of social stress on paranoid ideation to be significant in individuals with a distress score of 27 (PR 51.3) or higher, but not significant in individuals with a distress score below 27.

In sum, the moderation analyses indicate that the social stressors lead to an increase in paranoid thoughts in individuals who are more (compared to less) distressed by paranoid thoughts at baseline.

3.5. Mediating effect of self-esteem on subclinical paranoia

We then tested the four conditions according to which a mediation occurs (Table 2). The regression of the social stress condition on the paranoia difference score ($R^2 = .10$, $F(1, 75) = 8.46$, $P = .005$) demonstrates that social stress (IV) significantly affects paranoid ideation (DV) so that condition (1) is fulfilled. Evidence for condition (2) is provided by the second regression analysis which demonstrates that social stress (IV) is significantly associated with the self-esteem difference score (mediator). The multiple regression analysis of both social stress and the self-esteem difference score on the paranoia difference score demonstrates that the change in self-esteem (mediator) is associated with an increase in paranoid ideation (DV) when the experimental condition (IV) is controlled for. Therefore, condition (3) is fulfilled. The same regression analysis also provides evidence for condition (4): having entered the self-esteem difference score (mediator) into the model (change in $R^2 = .09$; $R^2 = .19$, $F(2, 73) = 8.59$, $P < .001$), the effect of social stress (IV) on the paranoia difference score (DV) was no longer significant. The mediating model is depicted in Fig. 2.



Note: ID: independent variable; DV: dependent variable, n.s.: not significant

Fig. 2. Mediating effect of self-esteem.

When formally testing the mediation effect by bootstrapping 95% confidence intervals (CI) of the indirect effect, we found the change in self-esteem to significantly mediate the link between social stress and changes in paranoid ideation (CI .45–3.86).

4. Discussion

This study investigated the impact of social stress on subclinical paranoia using an experimental design and considering specific moderating and mediating factors. First, we found a direct effect of social stress on paranoid ideation. Individuals who were socially excluded and received a negative feedback showed a stronger increase in paranoid thoughts compared to those who were not. This is consistent with models assuming that stress precedes and triggers psychotic symptoms (Nuechterlein & Dawson, 1984) and corroborates the findings from experience sampling studies (Myin-Germeys & van Os, 2007). Our study also corroborates the results by Lincoln et al. (2008) who found an increase in paranoid ideation in response to a noise stressor. Furthermore, our study extends these findings by investigating the impact of social stressors in particular and by adding self-esteem to the equation.

As hypothesized, paranoid thoughts increased as a consequence of the decrease in self-esteem rather than as a direct reaction to social stress. The mediation effect of the decrease in self-esteem was significant, although the decrease in self-esteem from pre to post test was small in magnitude. The finding of the mediating role of reductions in self-esteem extends results of the experience sampling studies that demonstrated the temporal relationship of decreases in self-esteem and paranoia (Thewissen et al., 2008). It is also consistent with the finding by Barrowclough et al. (2003) that criticism impacts indirectly on the positive symptoms of psychosis through negative self-evaluations.

The mediating role of a decrease in self-esteem on paranoid ideation cannot be discussed without reference to the psychodynamically oriented position that persecutory delusions might serve to defend against low self-esteem. Bentall, Kinderman, and Kaney (1994) proposed persecutory delusions to reduce the discrepancy between the actual-self and the ideal-self that is opened up in threat-related situations. The finding that self-esteem decreased in response to social stress whereas paranoid ideation increased fits in with the notion that delusions could function to protect the self from further activation of underlying negative self-schemas. Whether paranoid ideation preserves or even enhances self-esteem could be a topic of future experimental studies.

Alternatively, the association between decreases of self-esteem and increases in paranoid ideation in response to social stress can be interpreted in accordance with the cognitive model of persecutory delusions which postulates that delusions directly reflect feelings of inferiority (Freeman et al., 2002). Also, in line with the finding that the specific perception of not being respected and loved by significant others was associated with paranoia (Lincoln, Mehl, et al., 2010), the experience of being excluded is likely to have activated pre-existing negative self-schemas and pre-existing negative views of others, both of which are likely to trigger a distrustful attitude towards others. This is also consistent with the finding that traumatic experiences that have been shown to increase the risk of developing a psychotic disorder (Varese et al., 2012) are associated with both low self-esteem and paranoid ideation (Freeman & Fowler, 2009; Gracie et al., 2007). The previous adverse experiences might additionally explain why some persons react to stress with a decrease in self-esteem and a subsequent increase in paranoid ideation while others do not.

The finding that the increase in subclinical paranoia was not moderated by the proneness to positive symptoms as measured with the CAPE (Stefanis et al., 2002) was unexpected and stands in

contrast to previous experimental studies (Lincoln, Lange, Burau, Exner, & Moritz, 2010; Lincoln et al., 2008). Furthermore, an experience sampling study found the degree of vulnerability to be associated with increased psychotic thoughts in reaction to stress: relatives of patients with psychosis reported increases in psychotic experiences in reaction to stressful activities, whereas healthy controls did not (Myin-Germeys, Delespaul, & van Os, 2005). The lack of significance of the CAPE as a moderator in our study might have been due to the small size of the subsamples in the experimental groups that made moderating effects harder to detect and to the small variability of values of the CAPE positive scale ($SD = .32$). Interestingly, we found that the level of distress associated with baseline paranoia moderated the effect of social stress on paranoid ideation. It seems, therefore, that the affective aspect of proneness to paranoia is a predictive factor in regard to stress-sensitivity. This corroborates with the finding that the distress associated with paranoia rather than the beliefs per se differentiated between patients with delusions and healthy individuals (Lincoln, 2007). However, further research is needed to investigate the impact of different vulnerability factors on responses to social stress in psychosis.

A strength of this study is the use of an experimental design that allows to test the causal role of social stress on paranoid ideation. The Cyberball paradigm is well established (Williams et al., 2000). As it evokes feelings of exclusion that are assumed to be predominant in paranoia (Preti & Cella, 2010), it is a feasible experimental feature for the research of the formation of delusions. However, the interpretation of our results is restricted by the fact that we assessed the combined impact of exclusion and criticism on paranoid ideation and therefore cannot analyse the impact of each component alone. Also, the interpretation of the finding that the impact of the social stressors on negative emotions is independent of the order they were presented in (exclusion first, criticism first) is restricted by the limited subgroup sample sizes. Nevertheless, the two social stressors combined impacted on levels of subclinical paranoia. Future research might particularly focus on the effect of specific social stressors in psychosis.

Furthermore, our study emphasized the relevance of short-term reductions in global self-esteem to the increase in paranoid ideation. However, previous studies have demonstrated that also specific facets of self-esteem such as positive and negative evaluations of the self (Vázquez et al., 2008) and interpersonal self-concepts (Fowler et al., 2006; Lincoln, Mehl, et al., 2010) play an important role in paranoia. Thus, future studies should consider the impact of social stress on specific facets of self-esteem in delusions. In addition, such studies could investigate whether reactions to social stress and decreases in self-esteem affect different facets of paranoia. Specifically, it might be interesting to investigate whether social stress solely increases general suspiciousness (suspicious thoughts e.g. “Bad things are being said about me behind my back”, Freeman et al., 2005) or whether it enhances psychotic paranoia (delusional thoughts, withdrawal, avoidance).

Whereas results from the general population are necessary to understand the process of the formation of paranoid delusions in the early stage of psychosis, our results need to be confirmed in a patient sample to draw conclusions about the processes involved in the formation of delusions in clinically relevant stages. Considering the finding that patients with schizophrenia respond to a simple noise stressor with an increase in paranoid beliefs (Moritz et al., 2011), it seems likely that a social stressor might also impact on clinically relevant paranoia and that the decrease in self-esteem is a likely mediator in the equation. The patients’ reaction to social stressors might not only be reflected in decreased self-esteem and paranoid interpretations but also in behavioural reactions such as social withdrawal, which in turn will further decrease self-esteem and increase paranoia.

Several clinical implications can be drawn from this experimental study. In line with vulnerability–stress-models (Nuechterlein & Dawson, 1984), our study confirmed the impact of social stress on the exacerbation of subclinical paranoia in vulnerable individuals. This underlines the need for effective prevention programs for persons at higher risk (Bechdolf et al., 2005) that promote coping with stress and thereby prevent the onset of psychosis. Furthermore, our study clearly demonstrates that a reduction in self-esteem rather than social stress per se impacts on the formation of delusions. Therefore, both prevention programs and therapeutic interventions should include techniques that aim at the ability to sustain constant levels of self-esteem under social stress. Over and above the well-known CBT-interventions (Fowler, Garety, & Kuipers, 1995) one way to achieve this are metacognitive approaches (Moritz, Vitzthum, Randjbar, Veckenstedt, & Woodward, 2010) that raise the awareness of thinking biases and negative self-evaluations and systematically practice the application of more realistic and constructive thoughts rather than self-critical ones. An equally promising approach is the development of kindness towards self and others as proposed in compassion focused therapy (Gilbert, 2009). Finally, psychodynamic therapy emphasizes the therapeutic relationship characterized by both empathy and safety to counteract the vulnerable self and as a consequence reduce the need for the proposed defensive mechanism (Hingley, 1997). Future experimental studies might provide insight into whether persons who use the proposed self-esteem enhancing strategies are able to maintain self-esteem and are therefore less likely to develop delusions in socially stressful situations.

Declaration of interest

None.

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Anhang C: Artikel 3

Running head: Review of self-esteem in persecutory delusions

The relevance of self-esteem and self-schemas to persecutory delusions: A systematic review

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Abstract

Background: Self-esteem is frequently targeted in psychological approaches to persecutory delusions (PD). However, its precise role in the formation and maintenance of PD is unclear and has been subject to a number of theories: It has been hypothesized that PD function to enhance self-esteem, that they directly reflect negative conceptualizations of the self, that self-esteem follows from the perceived deservedness of the persecution (poor-me vs. bad-me-paranoia) and that the temporal instability of self-esteem is relevant to PD. In order to increase our understanding of the relevance of self-esteem to PD, this article systematically reviews the existing research on self-esteem in PD in the light of the existing theories.

Methods: We performed a literature search on studies that investigated self-esteem in PD. We included studies that either investigated self-esteem a) within patients with PD or compared to controls or b) along the continuum of subclinical paranoia in the general population. We used a broad concept of self-esteem and included paradigms that assessed implicit self-esteem, specific self-schemas and dynamic aspects of self-esteem.

Results: The literature search identified 317 studies of which 52 met the inclusion criteria. The reviewed studies consistently found low global explicit self-esteem and negative self-schemas in persons with PD. The studies therefore do not support the theory that PD serve to enhance self-esteem but underline the theory that they directly reflect specific negative self-schemas. There is evidence that low self-esteem is associated with higher perceived deservedness of the persecution and that PD are associated with instable self-esteem. Only few studies investigated implicit self-esteem and the results of these studies were inconsistent.

Conclusions: We conclude by proposing an explanatory model of how self-esteem and PD interact from which we derive clinical implications.

Key words: persecutory delusions, paranoia, self-esteem, self-schemas

1. Introduction

Self-schemas can be broadly understood as "cognitive generalizations about the self, derived from past experience, that organize and guide the processing of self-related information contained in the individual's social experiences" [1]. This definition of self-schemas emphasizes the imprinting of experiences, whereas the definition of self-esteem focuses on the evaluation of the self: Self-esteem is defined as "a positive or negative attitude toward a particular object, namely, the self" [p. 30, 2].

Both low self-esteem and negative self-schemas have repeatedly been demonstrated in patients with schizophrenia [e.g. 3, 4, 5] and self-esteem has been a target in a number of psychological interventions in schizophrenia [6, 7]. However, the precise role of self-esteem and self-schemas in schizophrenia and in the formation and maintenance of delusions in particular has remained unclear. Following the proposal of a symptom specific approach to investigate the aetiology in schizophrenia [8], different cognitive theories on persecutory delusions (PD) have been put forward, each emphasizing different functions, processes or facets of self-esteem.

The early theory by Bentall [9] which initiated abundant research, hypothesizes that PD might serve to prevent feelings of inferiority of becoming conscious. According to this theory, patients accuse others for their own failure in order to reduce the discrepancy between the actual-self and the ideal-self that arises as a consequence of self-threatening events [10]. For example, a patient who feels persecuted and observed by the secret service at work preserves his or her self-esteem by accusing the secret service of being responsible for own work-related failures and therefore avoids facing up to existing feelings of incompetence or inferiority. As a consequence, it is assumed that patients with PD have normal or even elevated levels of explicit self-esteem, but low levels of implicit self-esteem [9, 11]. Consequently, these authors interpret discrepancies between explicit and implicit measures of self-esteem as an indicator for the defensive function of delusions [12].

Bentall´s model [9] was not left unchallenged. Based on a previous extensive review [13], Freeman et al. [14] proposed that PD directly reflect impaired self-esteem and the patient´s emotional concern associated with it rather than an attempt to strengthen feelings of self-worth. In reference to the example mentioned above, the delusion that the secret service observes the patient at work directly reflects the patients´ concern about his or her incompetence or inferiority to others and the anxiety resulting from this view. Following the model by Freeman et al. [14], many researchers [15-17] have proposed that patients are characterized by specific facets of self-esteem, such as extreme negative self-evaluations (e.g. seeing oneself as weak or bad) and dysfunctional self-concepts related to achievement (e.g. feeling worthless due to making mistakes), to interpersonal relationships (e.g. seeing oneself inferior to others,) or to the acceptance by other people (e.g. being dependent on the approval by others) rather than by global impairment in self-esteem. According to Barrowclough et al. [5], the interpersonal environment might have influenced the development of specific dysfunctional beliefs about the self which then enhance the formation of delusions.

A further theory proposed Chadwick and Trower [18] suggests that there are two types of paranoia which are both associated with a negative view of others but go along with different conceptualizations of the self. According to this theory, in poor-me-paranoia, patients see themselves as a victim of undeserved persecution and are likely to have positive self-schemas, feelings of superiority and normal (or even higher) self-esteem. In bad-me-paranoia, patients believe that their persecution is a deserved punishment which is likely to be accompanied by negative self-schemas, low self-esteem and shame.

A recent line of theoretical considerations is based on the idea that instable self-esteem - rather than low global self-esteem per se - is a determining factor in the formation of PD [12, 19-22]. In a revised version of his theory, Bentall et al. [12] explained the inconsistent results in levels of self-esteem by proposing that the fluctuations in self-esteem reflect the unsteady extent to which a patient with PD successfully avoids negative self-representations

to become present by attributing self-threatening events to external causes. As a consequence, it is hypothesized that fluctuations in self-esteem are more predominant in individuals with higher levels of (trait) PD than in healthy controls and that momentary decreases in self-esteem precede a momentary increase in (state) PD [12].

Taken together, the theories on the role of self-esteem in PD are developing rapidly. After an initial focus on global explicit and implicit self-esteem and its relationship to PD, the field has raised new and increasingly precise theories on the nature of this relationship, including more specific aspects of self-esteem, the association of self-esteem with different types of paranoia and dynamic aspects of self-esteem. Earlier extensive reviews summarizing the research on self-esteem in PD found inconsistent results concerning both the extent of self-esteem and the proposed discrepancy between explicit and implicit self-esteem [12, 13]. A somewhat more recent review by Freeman [23] concluded that low self-esteem is associated with PD and emphasized both the importance of specific self-schemas and different subgroups of paranoia (such as poor-me and bad-me paranoia). These reviews triggered a massive increase in the interest and research of the topic of self-esteem and paranoia, resulting in numerous new empirical studies on the topic. Therefore, it now seems timely to systematically review the studies that have investigated the associations of self-esteem, self-schemas and PD and to discuss the evidence they provide in the light of the existing theories. A more detailed understanding of the mechanisms by which self-esteem impacts on PD and vice versa is likely to enable us to develop increasingly specific psychological interventions aimed at reducing delusional beliefs and distress.

2. Methods

2.1 Procedure

To select studies that investigated the above mentioned theories on self-esteem in PD, we performed a literature search in PsycINFO and Ovid MEDLINE(R) in March 2012 as

described in section 2.2. The selected studies were then categorized according to the theories. To test the theory that PD function to defend against low self-esteem, we reviewed studies that investigated global explicit and implicit self-esteem in PD and the discrepancy between the explicit and implicit measures of self-esteem (section 3.1). To investigate the evidence for the assumption that PD directly reflect specific beliefs of inferiority, we reviewed studies that assessed positive self-evaluations, negative self-evaluations, achievement related and interpersonal self-concepts (section 3.2). To investigate whether self-esteem varies according to poor-me- and bad-me-paranoia, we reviewed studies that investigated self-esteem, positive and negative self-schemas in individuals with varying levels of perceived deservedness of the persecution (section 3.3). Finally, in order to test the hypothesis that instable self-esteem is relevant to PD, we reviewed studies that investigated whether fluctuations in self-esteem are associated with higher trait paranoia. We also reviewed studies that investigated whether the reduction in self-esteem precede an increase in paranoia (section 3.4).

We included studies that assessed self-esteem in samples of patients with acute or remitted PD, healthy controls and controls with depression. As the continuum of paranoia in the normal population is well-studied 24, we additionally reviewed studies that assessed self-esteem in paranoia-prone individuals.

We tested whether the overall effect of the studies would be tolerant to the publication. For those studies that are robust to the publication bias, we also estimated the effect sizes of the relevant studies (see section 2.3).

2.2 Selection of studies

Figure 1 depicts a detailed description of the stepwise process of the study selection including the key words used for the literature search. First, we selected the studies according to our keywords (k = 317). We then restricted the study pool by applying the following inclusion criteria: empirical, quantitative studies (step 1); assessment of PD in persons with psychosis

or in paranoia-prone individuals (step 2); assessment of self-esteem (step 3); assessment of the association of PD and self-esteem (step 4). In step 2, we therefore excluded studies that focused on other mental disorders, on general psychiatric samples or on specific healthy subsamples (such as prisoners). If samples of studies overlapped we included the study that was published first.

Overall, 52 studies met all of our inclusion criteria (figure 1). Some of the studies investigated more than one theory or compared self-esteem in the patient sample to more than one control group. These studies will therefore be cited more than once. The reviewed studies either used a group comparison design (comparison of patients with PD to healthy or depressed controls), correlation or regression analyses (investigating the association of self-esteem and PD) or they compared self-esteem in patients to standard norms.

[figure 1]

2.3 Consideration of publication bias and estimation of effect sizes

In cases, in which at least five studies were available to test a specific assumption and these studies produced unambiguous evidence in favour of it, we tested whether the results were resistant to the publication bias by computing the "fail-safe-N-rate"[25]. The "fail-safe-N-rate" indicates how many unpublished studies with null results would be required to render the significant effect of all reviewed studies non-significant. It is calculated by the formula $[(\sum Z^2)/ 1.645^2] - k$; where $\sum Z$ is the sum of Z-values for the corresponding *p*-values of all studies and *k* is the number of reviewed studies. If reported, the exact *p*-levels were entered into the formula. When exact *p*-levels were not available in the reviewed studies, Z = 1.645 was used for significant results and Z = .00 was used for non-significant results. In cases in which self-esteem was assessed with more than one measure, we used the averaged Z-value of the resulting levels of significance. Studies that compared self-esteem in PD to standard norms were not included in the computation of the "fail-safe-N-rate". We calculated the "fail-

safe-N-rate" for patients with PD and for healthy individuals with varying levels of paranoid ideation separately. A "fail-safe-N-rate" higher than the tolerance level of 5*k*+10 indicates that the effect in the cited studies is resistant to a publication bias.

For the studies with results robust to publication bias that provided the necessary statistics for estimating effect-sizes, we estimated the effect size by either using the formula and effect size calculator by Wilson [26] in case of group comparisons or by using the correlation or regression coefficient. We evaluate the magnitude of effect sizes as small, medium or large following guidelines by Cohen [27].

3. Results

In order to facilitate the interpretation of the results, we briefly describe the measures that the studies used to assess self-esteem at the beginning of each result section. In the section "patient populations" we review studies that investigated self-esteem in patients with PD a) compared to healthy controls and/ or along the continuum of the patients´ PD, b) compared to patient with depression and c) compared to patients without acute delusions. The section "paranoia proneness" comprises studies that investigated self-esteem along the continuum of subclinical paranoia in the general population.

3.1 Global self-esteem in persecutory delusions

Explicit self-esteem

The measures that were used in the reviewed studies to assess global self-esteem are depicted in table 1.1 which includes a description of their main focus as well as their psychometric properties. As can be seen, the Rosenberg Self-Esteem Scale was used most frequently. In all questionnaires, the participant is asked to endorse self-descriptive statements to the degree to which they describe themselves.

[table 1]

Overall, 35 studies investigated the association of global self-esteem and PD (table 2).

Patient populations. Twenty-three studies investigated global self-esteem among patients with PD or in comparison to healthy controls. Of the 12 studies that used a group comparison design, seven found significantly lower global self-esteem in patients with PD compared to healthy participants [28-34] and four found non-significant results [35-38]. However, it need noting that the patient sample in the study by Lyon and colleagues [35] was small (n = 14) and that the studies by Fornells-Ambrojo and Garety [36] and McCulloch et al. [37] involved specific samples with early or late-onset-psychosis and might need to be considered separately. The significant results were corroborated by a further study that investigated self-esteem in a sample of individuals with different levels of paranoia (current paranoid patients, current nonparanoid patients, remitted patients and healthy individuals with high and low paranoia scores) [22]. When the participants were divided into high, medium or low paranoid groups, the high paranoid group demonstrated lower self-esteem than the low paranoid group. In addition, seven studies investigated self-esteem in patients with psychosis along the continuum of PD and each of these studies found low self-esteem to be correlated with PD [39-45]. In addition, three studies found self-esteem in patients with PD to be low in comparison to standard norms [46-48], whereas one study found no differences to norm values of self-esteem [49]. The corresponding "fail-safe-N-rate" for the 19 studies that used statistical tests was 271, which is clearly above the critical value of 105. Therefore, the fairly consistent finding that global self-esteem is low in persons with PD appears to be robust to a publication bias. As can be seen in table 2, the effect sizes of the significant studies were large for studies that compared patients with PD to healthy controls (range d = .92 - 2.19) and medium to large for the correlational studies within patient samples (range r = .22 - .50).

[table 2]

Patients with depression served as a control group to patients with PD in nine studies. These studies are marked with "*DC*" (depressed controls) in the comment row of table 2. Six of these studies reported higher self-esteem in patients with PD compared to patients with depression [34-38, 50]. The remaining three studies found no differences between the two groups [29, 32, 33]. The corresponding "fail-safe-N-rate" of 64 is above the critical value of 55. Thus, the finding that global self-esteem is enhanced in persons with PD when compared to patients with depression is robust to a publication bias. The relevance of the finding is further corroborated by the magnitude of the effect sizes (range d = .98 - 3.50).

The impact of delusional status was investigated in six studies that tested whether patients with acute PD differ in their levels of self-esteem from patients with remitted PD or from patients with psychotic disorders but without PD. These studies are marked with "*AD"* (acuteness of delusions) in the comment row of table 2. Five studies did not find differences in levels of self-esteem between patients with acute or remitted PD [29, 34] or between patients with PD and patients with psychotic disorders but without PD [28, 46, 51]. In contrast, one study found patients with PD to have higher global self-esteem than patients without PD [33].

Paranoia proneness. Ten studies investigated global self-esteem in individuals with varying levels of subclinical persecutory ideation (bottom of table 2). All of these studies found lower self-esteem to be associated with higher levels of subclinical persecutory ideation [15, 52-60]. The value of these results is further corroborated by the fact that they all used large samples, varying between 60 and 4636. The experimental study by Palmier-Claus et al. [53] investigated levels of momentary self-esteem after an stress induction and found low self-esteem to be associated with greater levels of paranoia. The "fail-safe-N-rate" is 184, which is higher than the critical value of 60. Therefore, the finding that low global self-esteem is associated with more subclinical paranoia is robust to a publication bias. However, with

two exceptions, the effect sizes of the subclinical studies were small to medium (range *r* = -.13 - .45) and therefore somewhat smaller than in the clinical studies.

Taken together, there is sufficient evidence for low global self-esteem in persons with PD, whether these are acute, remitted or at a subclinical level. Furthermore, there is also sufficient evidence that self-esteem is not as strongly impaired in patients with PD as it is in patients with depression.

Implicit self-esteem

Implicit self-esteem was assessed in five studies of patients with PD and in one subclinical study. The Implicit Association Task (IAT; [61]) was used most frequently for the assessment of self-esteem and one study used the go/ no-go association task (GNAT; [62]). The implicit measures and their psychometric properties are described in detail in table 1.2. As can be seen, the implicit assessment methods employed in these studies have demonstrated weak convergent validity compared to the explicit ones.

Patient populations. As can be seen in table 2, two of the four IAT-studies and the GNAT-study found low implicit self-esteem in patients with PD compared to healthy controls [30, 33, 38]. However, it needs noting that McKay et al [30] and Moritz et al [33] based their analyses on rather small sample sizes. In contrast, two further IAT-studies found no differences between the two groups [29, 31].

When compared to patients with depression, one study found patients with PD to have low implicit self-esteem [33] whereas two studies did not [29, 38].

Two studies assessed implicit self-esteem in patients with acute versus remitted PD [29, 33], but did not find significant differences between the two groups.

Paranoia proneness. The nonclinical study found paranoid ideation to be uncorrelated to implicit self-esteem as measured using the IAT [52].

Overall, there is not sufficient evidence for low implicit self-esteem in patients with PD compared to healthy individuals or to patients with depression. Also, the delusional status (acute versus remitted) does not seem to impact on levels of implicit self-esteem.

Discrepancy between explicit and implicit self-esteem

Six studies assessed both explicit and implicit self-esteem in patients with PD (k = 5) or in healthy individuals (k = 1). These studies are also depicted in table 2.

Patient populations. Three of those studies compared levels of explicit and implicit self-esteem within patients with PD solely on a descriptive level [30, 31, 33] and are therefore difficult to interpret. Two studies investigated the discrepancy in patients with PD by statistically comparing standardized values of explicit and implicit self-esteem using a MANOVA and post hoc Bonferroni-test for within-group comparisons [29, 34]. Neither of these studies found a difference between levels of explicit and implicit measures in patients with acute and remitted delusions. However, healthy controls and controls with depression revealed a discrepancy: healthy individuals showed higher explicit than implicit self-esteem, whereas the converse pattern was found for controls with depression.

Paranoia proneness. Cicero and Kerns [52] investigated the discrepancy in healthy individuals using regression analyses with paranoid ideation as a dependent variable and explicit self-esteem, implicit self-esteem and the product of explicit and implicit self-esteem as independent variables. Consistent with the results from the clinical samples, the interaction of explicit and implicit self-esteem did not significantly predict paranoia.

Overall, the small number of studies did not produce evidence for an explicit- implicit discrepancy in patients with PD or in healthy individuals with high levels of paranoia.

3.2 Specific self-schemas in persecutory delusions

Positive self-evaluations

A detailed description of the measures for the assessment of positive and negative self-evaluations is depicted in table 1.3. With the exception of the Self-Evaluation and Social Support Interview, these measures are questionnaires that ask the participant to endorse self-descriptive statements on specific positive (e.g. "talented") or negative (e.g. "vulnerable") attitudes towards the self.

Overall, fourteen studies investigated positive self-evaluations in PD (table 3).

Patient populations. Four studies assessed explicit levels of positive self-evaluations in patients with PD compared to healthy controls and consistently found no difference between the two groups [11, 31, 34, 63]. In line with this, one correlational study found that positive self-evaluations were uncorrelated to PD in patients with psychosis [64]. However, another study using a large sample of patients with PD, patients with depression and healthy individuals found less positive self-evaluations to be associated with higher levels of PD [65].

In comparison to patients with depression, patients with PD were found to reveal more positive self-evaluations in all three studies [11, 34, 63].

The relevance of positive self-evaluations to the acuteness of PD was investigated in three studies. They consistently found no differences in positive self-evaluations between patients with acute PD and patients with remitted PD [34, 63] and between patients with PD and patients with psychotic disorders but without PD [45].

[table 3]

Paranoia proneness. Seven studies investigated positive self-evaluations in a nonclinical population (bottom of table 3). Four of these studies failed to find an association of paranoid ideation and positive self-evaluations in a sample of individuals with prodromal symptoms [66] or in student samples [15, 67, 68], whereas three studies found less positive self-evaluations to be associated with higher levels of paranoia [21, 69, 70]. It should be noted

that the studies by Freeman et al. [68] and Green et al. [67] used experimental designs. Neither of these studies found associations between positive self-evaluations and paranoia after participants had been exposed to either a virtual neutral reality train ride or ambiguous stressful events, respectively. However, Green et al. [67] found a trend for individuals who provided paranoid explanations for the cause of ambiguous events to show less positive self-evaluations compared to individuals who provided non-paranoid explanations.

Positive implicit self-evaluations. Two studies investigated positive self-evaluations implicitly using the Self-Referent Incidental Recall Task or the Emotional Stroop Test (EST), which are described in detail in table 1.2. The main outcome variable was the number of positive and negative self-related words recalled or the time to name the colour of written positive and negative self-related words, respectively, with faster responses indicating stronger associations to the self-concepts. As can be seen in table 3, both studies found fewer positive self-evaluations in patients with PD compared to healthy controls [11, 34]. No differences were detected in positive self-evaluations between patients with PD and patients with depression [11, 34] or between patients with acute and patients with remitted delusions [34].

Taken together, persons with acute and remitted PD do not seem to differ from each other or from healthy controls in positive self-evaluations, but tend to reveal more positive self-evaluations than individuals with depression. In addition, positive self-evaluations in healthy persons do not seem to be related to paranoid ideation either. On an implicit level, the patients´ positive self-evaluations tend to be impaired; however this finding is based on only two studies.

Negative explicit self-evaluations

The 16 studies tested whether negative self-evaluations are crucial to PD (table 3).

Patient populations. Of the eight studies that investigated negative self-evaluations in patients with PD, four studies used a group comparison design and consistently found negative self-evaluations to be enhanced in patients compared to healthy individuals [11, 31, 34, 63]. In line with this, the four correlational studies found negative self-evaluations to correlate with PD in patients with psychosis [39, 64, 71] and in a large sample of patients with PD, patients with depression and healthy controls [65]. One of these studies used a longitudinal design [71] and found negative self-schemas to predict paranoia (rather than vice versa). The corresponding "fail-safe-N-rate" of these nine studies is 133, which is above the critical value of 50. Therefore, the association of PD and enhanced negative self-evaluations is robust against the publication bias. In addition, the effect sizes of the significant studies were large for studies that compared patients with PD and healthy controls (d = .84 - 1.15) and medium for correlational studies within patient samples (r = .36).

When compared to patients with depression, one study found patients with PD to have less negative self-evaluations [34] and two studies produced non-significant findings [11, 63].

The relevance of the acuteness of PD to negative self-evaluations was investigated in three studies. Two studies found no difference between acutely deluded and remitted patients [34, 63], whereas one study found patients with PD to have enhanced negative self-evaluations compared to patients with psychotic disorders but without PD [45].

Paranoia proneness. Six of seven nonclinical studies (bottom of table 3) found negative self-evaluations to be associated with higher paranoid ideation in persons with prodromal symptoms [66] and in healthy individuals [15, 21, 68-70]. One study used an experimental design and did not find differences in negative self-evaluations between individuals who provided paranoid explanations compared to those who provided non-paranoid explanations for stressful situations [67]. However, number of persons who provided

paranoid explanations was small (n = 9). The corresponding "fail-safe-N-rate" of 75 is above the critical value of 45 indicating robustness against the publication bias. Furthermore, as can be seen in table 3, the effect sizes in the nonclinical studies were medium to large (range r = .39 - .56).

Negative implicit self-evaluations. Two studies investigated negative evaluations implicitly (table 3). One study found higher negative self-evaluations in patients compared to healthy controls [11], whereas the other study did not [34]. There were no differences between patients with PD and patients with depression [11, 34] or between patients with acute and patients with remitted delusions [34].

Altogether, the reviewed studies demonstrate a clear association of explicit negative self-evaluations and both clinically relevant PD and delusion proneness. Due to few and inconsistent studies, it remains unclear whether levels of negative self-evaluations are associated with the acuteness of PD and whether patients with PD and patients with depression differ in their negative self-evaluations. Also, the few studies using implicit assessment revealed mixed findings and further research is needed in this domain.

Achievement related and interpersonal self-concepts.

Six studies investigated dysfunctional self-concepts in PD. The questionnaires for the assessment of these facets of self-esteem (including subscales and examples) are described in table 1.4. They assess the perceived evaluation by others (FSKN subscale "self-estimation by others"), self-schemas depending on goal achievement (DAS subscale "defeatist-performance", PSI subscale "autonomy", SLSC subscale "self-competence") and self-concepts depending on the acceptance by other people (DAS subscale "need for acceptance", PSI subscale "sociotropy").

Patient populations. Of the five studies conducted in a clinical sample, two studies found enhanced dysfunctional self-concepts as assessed with the full DAS scale in patients

with PD compared to healthy controls [72, 73]. One study investigated dysfunctional self-schemas using the DAS in combination with the FSKN and found self-concepts depending on the acceptance (the DAS-subscale "need for acceptance"), interpersonal self-concepts (FSKN-subscale "self-estimation by others") and the interaction of the two scales (but not achievement related self-concepts) to be associated with paranoia in a linear regression analysis in a sample of patients with psychosis [16]. Therefore, patients whose self-concept depended on the acceptance by other people had high levels of PD if they also had negative interpersonal concepts as measured using the FSKN (e.g. felt unloved by the family). Another study investigated specific self-schemas using the Dysfunctional Attitude Scale developed by Burns [74] and found PD to be associated with vulnerability on the love, approval and achievement schemas (but not on the responsibility, perfectionism and entitlement schemas) [75]. In addition, one study used the Personal Style Inventory to investigate self-schemas and found differences between patients with acute PD and healthy individuals for achievement related self-concepts (but not for the self-concept related to sociotropy) [63]. However, after controlling for depression, the achievement related self-concept became non-significant and the self-concept related to sociotropy just failed to reach significance. We calculated the "Fail-safe-N-rate" for these five studies. For those studies that investigated dysfunctional self-concepts on a subscale or schema level, we included the mean Z of the subscales or schemas. The "Fail-safe-N-rate" was 19, which is below the critical value of 35. Therefore, the result that specific dysfunctional self-concepts are enhanced in individuals with PD is not robust against the publication bias.

Paranoia proneness. One subclinical study investigated the association of self-liking and self-competence and paranoid ideation [52] and found both self-liking and personal efficacy to be correlated with subclinical paranoia. However, although the interaction between self-liking and self-competence did not predict paranoia, there was a trend for paranoia to be associated with decreased self-liking independent of level of self-competence.

Overall, there is preliminary evidence from a limited number of studies that points to the relevance of dysfunctional self-schemas to PD. Specifically, the need for acceptance and related schemas of not being loved seem to be linked to persecutory beliefs whereas achievement related self-concepts or self-competence seem to be less relevant to PD. However, the results are not robust against the publication bias and this domain warrants further research.

3.3 Self-esteem and the perceived deservedness of the persecution

Seven studies investigated whether the degree to which the persecution was thought to be deserved (poor-me versus bad-me paranoia) is a determining factor to self-esteem in patients or delusion-prone individuals.

Patient populations. Three studies found that higher perceived deservedness of the persecution was associated with lower global self-esteem [47, 49] and with more negative self-evaluations [49, 63] in patients with PD. Consistent with this, another study found the levels of global self-esteem in patients with poor-me paranoia to be comparable to those of healthy individuals [36] indicating no impairment in self-esteem in the poor-me paranoia group.

Paranoia proneness. One study also found the deservedness of persecution to be associated with low self-esteem in healthy participants [69] and another study showed a trend towards this association [56]. In line with this, one study found subtypes of paranoia comparable to the poor me-paranoia and bad me-paranoia types to be represented in healthy delusion-prone individuals who either had high levels of depression and social anxiety and low self-esteem (bad-me) or low levels of depression, high self-esteem and moderate social anxiety (poor-me) [55].

Taken together, there is preliminary evidence from a small number of studies that the perceived deservedness is associated with low global self-esteem and negative self-evaluations in both clinical and nonclinical samples.

3.4 Instability of self-esteem in persecutory delusions

Seven studies investigated whether instable self-esteem is relevant to PD. Table 4 gives an overview of these studies including a detailed description of the measures of instability of self-esteem. To assess instability of self-esteem, the studies either used the Self-Esteem-Instability-Scale, the mean standard deviation from repeated application of the RSE or the Experience Sampling Method (ESM; [76]). The ESM reminds the patient at different times of the day to rate his or her levels of self-esteem and paranoia. The differences between two consecutive time points reflect decreases or increases in self-esteem and paranoia.

[table 4]

Patient populations. Although all four studies that investigated instability of self-esteem in patients with psychosis differ in their designs, their results consistently point to an association of instable self-esteem and paranoia [22, 44, 64, 77]. One study found fluctuations in positive (but not negative) self-schemas over a period of 18 months to be associated with higher paranoia [64]. In line with this finding, Jones et al. [44] found a reduction of self-esteem from baseline to a 18 month follow-up to go along with an increase in paranoia. Two ESM studies investigated the association of fluctuations in self-esteem and paranoia in patients in the daily life: One of these studies found a larger mean change in momentary self-esteem to be associated with higher trait-paranoia and also a reduction in momentary self-esteem to be followed by higher state-paranoia [22]. The other found a decrease in self-esteem (as measured at the time point before the beginning of an episode) to predict the onset of a paranoid episode in individuals with high trait paranoia[77].

Paranoia proneness. Consistent with the results from patients´ samples, the three nonclinical studies also found evidence for the relevance of instability of self-esteem to paranoia proneness [53, 59, 60]. Raes and Van Gucht [59] found higher self-reported fluctuations in self-esteem to be associated with higher paranoid ideation. Moreover, Thewissen [60] assessed self-esteem three times over a period of two years and found higher fluctuations in self-esteem to be accompanied by higher levels of subclinical paranoia. The study by Palmier-Claus et al. [64] used an experimental design and found that fluctuations in state-self-esteem under stress were associated with higher levels of paranoia.

In addition, two studies investigated the association of global self-esteem, fluctuations in self-esteem and paranoia in both a patient sample [22] and a nonclinical sample [59]. They found that the association between paranoia and self-esteem disappears when the instability of self-esteem was included into the model indicating the relevance of instability of self-esteem over and above low self-esteem.

In sum, few studies have investigated instability of self-esteem in individuals with paranoia so far, but have consistently found either instability or a reduction in self-esteem to be associated with higher levels of paranoid ideation in both patients with PD and healthy individuals. There is preliminary evidence that a decrease in self-esteem precedes the increase of state-paranoia and that low self-esteem could predict the onset of a paranoid episode. Finally, two studies point to the fact that the instability of self-esteem seems to be more relevant than global self-esteem per se.

4. Discussion

4.1 Discussion of the findings in the light of existing theories

The clearest result of this review was the finding that global self-esteem is impaired in persons with PD. Therefore, the notion that self-esteem is generally relevant in regard to PD as proposed by all the existing theories can be seen as empirically supported by the data.

In particular, the finding that both patients with PD and individuals with delusion-proneness are characterized by low levels of global self-esteem clearly supports the theory that PD are directly associated with and reflected in impaired self-esteem as proposed by Freeman et al. [14]. The results of the studies that investigated self-esteem using implicit measures were highly inconsistent and do not speak for the notion that PD are associated with underlying feelings of inferiority. The few studies that investigated the explicit/ implicit discrepancy, which has been proposed to be a strong indicator for the defensive function of PD [12] failed to corroborate the assumption of such a discrepancy. Overall, the results from studies investigating explicit self-esteem, implicit self-esteem and their discrepancy therefore do not support the theory that PD serve to enhance self-esteem.

Second, the reviewed studies confirm the idea that it is necessary to look beyond the realm of global self-esteem and into specific self-schemas in order to understand the role of self-concepts in the formation of PD. Our review demonstrates that both clinically relevant PD and paranoid ideation in healthy individuals are associated with specific negative self-evaluations. At the same time, the reviewed studies indicate that positive self-evaluations seem to be maintained or are, at least, less impaired in patients with PD. A still underexplored but promising field is the investigation of specific dysfunctional self-schemas such as schemas depending on the acceptance by others and negative interpersonal self-concepts in PD. Preliminary evidence from a small number of studies points to the relevance of these types of schemas for PD, whereas specific self-schemas related to achievement appear to be less relevant. However, further research is warranted to corroborate these findings.

Third, the reviewed studies support the theory that the perceived deservedness of the persecution is relevant to the self-concept. The reviewed studies in this domain uniformly indicate that higher perceived deservedness of the persecution is associated with low self-esteem or negative self-schemas in both clinical and nonclinical samples. However, the reliability of the finding is restricted by the small numbers of studies. As a study by Melo et al. [78] demonstrates that the perceived deservedness in patients with persecutory delusions is unstable over time, it could be interesting for future studies to investigate whether fluctuations in perceived deservedness are accompanied by changes in self-esteem.

Finally, the studies that investigated the instability in self-esteem in both clinical and nonclinical samples consistently found an association between fluctuations in self-esteem and higher levels of trait paranoia. This is in accord with the theory that the instability in self-esteem is generally meaningful to PD. The additional preliminary finding from one study that decreases in self-esteem precede increases in state paranoia underlines the dynamic processes involved in the formation of PD. Nevertheless the number of the studies in this domain was small and many were conducted by a single research group. Therefore, further research in this area would be welcome.

4.2 Discussion of additional relevant findings

Patients with acute and remitted PD do not seem to differ from each other in levels of self-esteem, although the reviewed studies demonstrate that paranoid ideation is associated with low self-esteem in both patients and delusion-prone individuals. In order to explain this finding it might be helpful to distinguish the processes in healthy individuals and patients: Prior to the development of clinically relevant delusions, low self-esteem goes along with and is a risk factor for developing psychosis [79]. In the aftermath of psychosis, however, self-esteem remains impaired even when delusions have been successfully treated by antipsychotic medication [80]. This could be due to the detrimental effect of the stigmatizing

experience of mental disorders on self-esteem [81] that neutralizes the positive effect that the reduction in psychopathology might have. It might also be due to post-psychotic depression that is accompanied by greater insight and lower self-esteem [82] and which in turn may strengthen the existing negative view of the self.

Also, although both clinical and nonclinical studies underline the relevance of global self-esteem and persecutory belief, it is noteworthy that the findings from subclinical studies are more consistent than the ones from the clinical studies (significant results from all ten subclinical studies vs. from 14 of 18 clinical studies). This is likely to be due to larger sample sizes and higher statistical power in the nonclinical samples and to publication biases by which null results from nonclinical studies are less likely to be published than those from clinical ones.

Another interesting finding was that patients with PD seem to differ from both healthy controls and from patients with depression in their levels of global self-esteem and in positive and negative self-beliefs: Whereas the studies found patients with PD to have low global self-esteem compared to healthy controls, their self-esteem was enhanced compared to patients with depression. This finding seems conclusive, considering that the studies consistently found patients with PD to show extreme negative self-evaluations while positive self-evaluations are maintained. This pattern seems to distinguish them from healthy individuals who have many positive and few negative self-evaluative beliefs and from patients with depression who hold few positive and many negative self-evaluative beliefs.

4.3 Limitations

Until now, the majority of the studies used cross-sectional designs to investigate the theory that PD serve to enhance self-esteem. However, it is questionable whether cross-sectional assessments of global self-esteem provide a sufficient basis to investigate the applicability of this theory. Initiating longitudinal [71], experimental [53, 68] and experience

sampling studies [22] have therefore been advantageous in demonstrating the impact of negative self-evaluations on the increase of paranoid thoughts. Answers to the question of whether delusions arise as a way of stabilizing self-esteem (supporting the assumption that delusions serve to enhance self-esteem) might be sought by investigating whether paranoid thoughts as caused by decreases in self-esteem result in enhanced self-esteem and whether self-esteem increases as a short-or long-term effect of paranoid interpretations.

Furthermore, more research is needed in the field of implicit self-esteem. The results of the few studies are inconsistent, probably due to methodological problems. In particular, the EST generally measures attentional biases [83], whereas Kinderman [11] interpreted the longer reaction times to name the colour of negative statements as low implicit self-esteem. In addition, although the self-esteem-IAT has demonstrated rather good psychometric properties in terms of re-test-reliability and predictive validity compared to other implicit measures of self-esteem [84], it has been criticised due its bipolar design (self versus other) [85]. Studies using more valid measures of implicit self-esteem seem necessary in order to (re)consider the validity of the theory that delusions might serve to enhance self-esteem. The IAT has been challenged by the go/ no-go-task [62] which uses an unipolar design and focuses solely on the implicit attribution of the self. In addition, recent studies in the realm of anxiety disorders have used the Approach Avoidance Task that measures implicit behaviour tendencies to threat related material [86]. These new paradigms seem a promising way to measure implicit self-esteem in PD which might shed light into the fairly inconsistent findings.

Finally, although we used the fail-save-N-rate to establish which findings can be considered as reliable and reported the effect sizes for the individual studies in these domains in order to gain a sense of the size of the effects, we did not integrate the effects by means of meta-analysis. A meta-analysis would have provided a more reliable estimate of the mean effects-sizes but would have gone beyond the scope of this review.

4.4 Towards a model of self-esteem in the formation and maintenance of persecutory delusions

Over and above low global self-esteem, specific negative and – possibly - dysfunctional interpersonal self-concepts seem to be characteristic of PD. In addition, self-esteem seems to be lower in patients who believe that their persecution is deserved. Finally, delusion-prone persons and persons with clinically relevant PD have been found to be characterized by instable self-esteem. In order to explain how the different aspects of self-esteem impact and interact with PD, we integrate these and additional findings into a model in which we conceptualize self-esteem and self-schemas to have a moderating and mediating role in the formation and maintenance of PD in the context of adverse interpersonal experiences and everyday stressors (figure 2).

[figure 2]

To begin with, it has been documented that a history of childhood adversity [87-89], social adversity [90], migration [91] and discrimination [92] increase the risk of developing a psychotic disorder. Furthermore, traumatic experiences were found to be associated with both negative self-schemas and paranoid ideation [70, 93]. In addition, a study by Barrowclough et al. [5] found the impact of the families´ criticism on the patients´ positive symptoms to be mediated by negative self-evaluations. In line with these findings, we suggest that negative beliefs about the self (as demonstrated in this review), one´s relationship to others such as perceiving oneself as low in social rank [94] and not accepted by others [16] and the perception of others as hostile and bad [15] to be shaped by critical and adverse interpersonal experiences. We further propose the negative emotional and cognitive reactions to previous adverse experiences to become reactivated when the vulnerable person is exposed to minor or major social stressors later in life. This reactivation might in turn activate the negative beliefs about the self (bad, unworthy, weak), others (bad, hostile), the relationship to others (not

accepted, not loved) and one's place in the social system (inferior, low in rank), which are reflected in momentary reductions in self-esteem.

The activation of dysfunctional schemas might further explain why persons who are vulnerable to delusions respond to stress with higher increases of negative emotions [20], in particular anxiety [95]. The individual experience of anxiety is likely to be misinterpreted as signalling threat [14, 68]. Furthermore, persons prone to delusions have been shown not only to report to have less access to strategies that help them down-regulate negative emotions [96]. They also tend to benefit less from the application of reappraisal strategies than healthy persons [97]. The difficulties to achieve a functional appraisal of the situation are further promoted by the well-documented biases in information processing, such as jumping to conclusions [98], difficulties in theory of mind [99] and attribution biases [100]. Paranoid beliefs therefore could be explained to arise as a function of activated schemas of a negative and unloved self and hostile others in combination with difficulties in reappraising the situation in a functional way in order to effectively down-regulating the anxiety and other negative emotions associated with it.

The paranoid beliefs are likely to be responded to by the patient with safety behaviour such as social withdrawal [47], self-stigmatization [101] and criticism and rejection by other persons, which in turn increase the distress and maintain the vicious circle. Negative beliefs about the persecution in regard to its deservedness (e.g. It deserves me right that my colleagues are talking behind by back) might have the potential to strengthen the existing negative self-concepts.

The results from our review do not favour the idea that paranoid explanations have a stabilizing effect on self-esteem. Therefore we did not add this aspect to the model. However, the finding that self-esteem is less impaired in patients with PD than in patients with depression could be considered as indirect evidence for this notion. Also, delusions in connection with positive evaluations of the content about paranoia (being persecuted means I

am important) might be self-stabilizing on a very short-term basis before the longer-term negative social consequences take hold. The notion of a short-term self-stabilizing effect would add to explaining the results from studies that find the fluctuations, rather than the self-esteem per se to be relevant to delusions. However, more work is required to investigate the short term effects of delusions on self-esteem.

4.5 Clinical implications

The results derived from this review clearly emphasize the need for self-esteem-enhancing interventions for patients with PD. Promisingly, cognitive behaviour therapy for psychosis (CBT-p; [e.g. 6]) has been shown to improve self-esteem in patients with psychotic disorders [5, 102], particularly when it includes specific interventions aimed at improving self-esteem [103, 104].

Recently developed interventions for psychosis directly focus on improving self-esteem. The metacognitive training [7] includes a specific module in which the patient learns to increase his or her awareness of thinking biases and negative self-evaluations before practicing the application of more realistic and constructive self-beliefs instead of self-critical ones. According to the findings from this review these types of interventions aimed at increasing and stabilizing global self-esteem can be expected to impact positively on delusions. Furthermore, compassion focused therapy (CFT; [105, 106]), that was developed for persons with high levels of shame and self-criticism, includes imagery-based techniques to strengthen the so called “self-soothing-system”, which involves feeling accepted and being cared for. Preliminary evidence for improvement in self-esteem and reduction in paranoid beliefs using CFT comes from a nonclinical study in which the participants were instructed to apply a compassionate image after the induction of negative emotions [107]. Similarly, loving kindness-mediation, an approach, that focuses on the development of a warm and caring attitude towards self and others has been shown to improve positive emotions and self-

acceptance in patients with negative symptoms [108] and might therefore also be effective in reducing fluctuations in self-esteem and the malevolent view of others in individuals with PD.

The idea that negative experiences might continue to impact on positive symptoms via negative and instable self-concepts in the patients´ everyday life also implies the necessity to work through these critical life events in the remitted status of psychosis. Psychological interventions for trauma in patients with psychosis have recently been developed [109] and a pilot study demonstrated that EMDR in patients with psychosis and comorbid PTSD can effectively reduce positive and PTSD symptoms and improve self-esteem [110].

Consistent with the assumption that self-stigma may continue to impact on low self-esteem in patients, a self-stigma reduction program has been shown to improve patients´ self-esteem [111] and therefore seems helpful in reducing long-term negative consequences of paranoid episodes. In line with this, social skill trainings also demonstrated to have indirect beneficial effects on self-esteem [112], possibly through increasing self-efficacy in interpersonal situations.

In sum, there are a range of available cognitive and emotion-focused interventions that seem promising to disrupting the vicious circle of traumatic experience, stressors, negative self-schemas and persecutory beliefs.

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Table 1: Measures of Self-Esteem

Measure	Description	Outcome	Psychometric properties
1.1 Global explicit self-esteem			
Adjective Self Relevance Rating Task (ASRRT; [30])	Questionnaire (30 items) including positive (e.g. "kind", "friendly") and negative (e.g. "bad", "weak") self descriptive adjectives; ASSRT is a computer based PPQ 11 (see below)	Global self-esteem	Val.: convergent: RSE: r = .63 Divergent: IAT: r = - .09 - .27
Coopersmith Self-Esteem Inventory, Adult Form (CSEI; [113])	Questionnaire (25 items) reflecting four factors: view of life (e.g. "I give in very easily"); family relations; tolerance and confusion level (e.g. "Things are all mixed up in my life"); sociability 114	Global self-esteem	Rel.: α = .75 Val.: significant negative correlations with scales assessing guilt and anxiety
Multidimensional Self-Esteem Inventory (MSEI; [115])	Questionnaire (116 items) assessing the self-perception of the social value and focuses on eight facets of self-esteem including a global measure of self-esteem in 40	Global self-esteem	Rel.: r = α .78 - .90 for subscales Val.: RSE: r = .81
Rosenberg Self-Esteem Questionnaire (RSE;[2])	Questionnaire (10 items) including five positive and five negative statements on global self-evaluations (e.g. "On the whole, I am satisfied with myself")	Global self-esteem	Rel.: Retest: r = .80; α = .87 Val.: convergent: r = .45 - .85; Divergent: IAT: r = .20 [84]
Self-Concept Questionnaire [116]	Questionnaire (30 items) reflecting five factors: attractiveness/ approval by others; contentment/ worthiness/ significance; autonomous self-regard; competence, self-efficacy; the value of existence	Self-esteem (the evaluation of self-concepts)	Rel.: α = .89 Val.: RSE: r = .83
Composite score of self-worth subscale and self-acceptance subscale as used in the study by Valiente et al. [38]	Self-Worth subscale of the World Assumption Scale 117 Self-Acceptance subscale of the Scales of psychological Well-Being 118; mean of normalized scores of both scales was used as an index for global self-esteem	Global positive self-esteem	Rel.: Internal consistency of composite index: α = .80
1.2. Global implicit self-esteem			
Implicit Association Test (IAT; [119])	Computer based reaction time task (1yn20 items), in which words need classifying to their correct category: concepts and attributions whose associations were congruent (self-pleasant vs. other-unpleasant, condition 1) vs. not congruent (self-unpleasant vs. other –pleasant, condition 2) share the same response key	Time difference: self-pleasant - self-unpleasant words (small differences indicating low self-esteem)	Rel.: Retest: r = .69/ α = .88 Val.: convergent: other implicit self-esteem measures: r =- .14 - .04; Divergent: RSE: r = .22 [84]
Emotional Stroop Test (EST, [83])	Reaction time task (10-15 items) in which the colour of positive and negative self-related words need to be named	Time difference: positive self-words - negative self-words; neutral words - positive words; neutral words - negative words	Val.: convergent: other implicit self-esteem measures: r = - .10 - .15; divergent: RSE : r = - .03 [84]
Go/ no-go association task [62]	Computer based reaction time task that is conceptualized on the IAT. It assesses the strength of the single associations between self and both	Time difference. self-negative minus self-positive (positive	Rel.: average split-half reliability

Table 1(continued)

	positive and negative attributes (self-positive vs. self-negative) by either pressing the space bar (go) or not (no-go).	score indicates positive self-esteem)	of *r* = .20 Val.: IAT: *r* = - .24- .27
Self-Referent Incidental Recall Task: Recall (SRIRT; [120, 121])	Recall task (24 items) which measures the number self-descriptive words that the participant is able to recall from the SRIRT-endorsement task (see below)	Proportion of positive and negative self-descriptive adjectives recalled	Rel.: α = .81 [34]
1.3. Positive and negative self-evaluations			
Brief Core Schema Scale (BCSS; [15])	Questionnaire (24 items) focussing on positive and negative evaluations of self (e.g. "I am respected" versus "I am unloved") and others (e.g. "Others are accepting" versus "Others are harsh.")	Positive/ negative self-evaluations	Rel.: α = .78 - .86 Val.: RSE: r = .53- .59 (for self-scales only)
Personal Profile Questionnaire (PPQ; [11])	Questionnaire (60 items) including positive (e.g. "kind", "friendly") and negative (e.g. "bad", "weak") self descriptive adjectives	Positive/ negative self-evaluations	---
Self-Esteem Rating Scale (SERS; [122])	Questionnaire (40 items) including positive (e.g. "I feel that I am a nice person.") and negative self-related statements (e.g. "I feel ashamed about myself.")	Positive/ negative self-evaluations	Rel.: α = .98 Val.: Factor analysis reveals unidimensionality with one large factor representing self-esteem
Self-Esteem Rating Scale-Short Form (SERS-SF; [123])	Questionnaire (20 items) including positive and negative self-related statements (short version of the SERS, see above)	Positive/ negative self-evaluations	Rel.: α = .87 - .91 for subscales Val.: RSE: *r* = .72- .79
Self Evaluation and Social Support Interview: Schizophrenia version [124]	Semi-structured interview to assess positive self-evaluations (subscales: positive personal attributes, positive role performance) and negative self-evaluations (subscales: personal attributes, negative role performance, self-acceptance)	Positive/ negative self-evaluations	Rel.: α = .76 for negative self-evaluations Val.: Two factor structure was confirmed using factor analysis
Self-Referent Incidental Recall Task: Endorsement (SRIRT; [34])	Questionnaire (30 items) including positive (e.g. "capable"), negative (e.g. "unwanted") and neutral (e.g. "realistic") trait words to describe the participant´s personality	Positive/ negative self-evaluations	Rel.: α = .81 Val.: Convergent: RSE: *r* = .67- .68
1.4 Achievement related and interpersonal self-concepts			
Dysfunctional Attitude Scale (DAS; [125])	Questionnaire (40 items) assessing interpersonal vulnerability (subscale need-for acceptance, e.g. "If others dislike you, you cannot be happy.") and achievement-related vulnerability (subscale defeatist-performance, e.g. "People will probably think less of me if I make a mistake.");	Conditional interpersonal beliefs	Rel.: α = .84 - .92 Val.: significant correlation with the BDI
Dysfunctional Attitude Scale [74]	Questionnaire (35 items) assessing depressotypic beliefs; it comprises six schemas: need for love; need for approval; perfectionism; degree of perceived entitlement; need for achievement; omnipotence/ responsibility 75	Self-schemas	
Frankfurt Self-Concept Scale (FSKN; [126])	Questionnaire (78 items): eight subscales assessing self-concepts related to achievement, self-esteem/ self-appraisal, mood/ sensitivity and	Self-concepts including interpersonal self-concepts	Rel.: α = .46- .92 for subscales Val.: confirmatory factor

Table 1(continued)

	psychosocial environment; The study by Lincoln et al. 16 used the subscale self-estimation by others (e.g. “I feel loved by my family”), which describes the perceived appraisal and acceptance by others.		analysis revealed over-differentiation of the FSKN
Personal Style Inventory (PSI; [127])	Questionnaire (48 items) assessing interpersonal relationships/ sociotropy (subscales: concern about what others think; dependency; pleasing others, e.g. “It is very important to me to be liked by others.”) and autonomous achievement/ autonomy (subscales: perfectionism/ self-criticism; need for control; defensive separation e.g. “I have a hard time forgiving myself when I feel I haven't worked up to my potential.”)	Interpersonal relationships: concern about what others think	Rel.: α = .86- .88 Val.: r = .39- .53 with a self-criticism-scale
Self-Liking/ Self-Competence Scale (SLCS; [128])	Questionnaire (20 items) assessing self-liking (e.g. “I feel worthless at times”) and personal efficacy/ self-competence (e.g. “I am a capable person”) with each scale comprising of 5 positive and 5 negative items.	Self-liking and self-competence	Rel.: α = .89- .92 Val.: significant correlation with the BDI (r = - .14 to - .34)

Note. Psychometric properties were derived from the original source if not otherwise specified; Rel.: Reliability, Val.: Validity

Table 2: Explicit and Implicit Self-Esteem and the Explicit/ Implicit Discrepancy in Individuals with Persecutory Delusions (PD)

Study	Participants	Measure(s)	Results			Comments and additional results
			Low explicit self-esteem in PD	Low implicit self- esteem in PD	Discrepancy in PD	
2.1. Global Self-Esteem in Patients with PD						
Group comparisons: Self-esteem in patients with PD compared to healthy controls						
Combs et al. [28]	32 patients with PD 28 patients with other delusions 50 healthy controls	RSE	✓ (*d* =.92)	---	---	***AD:*** No differences between patients with and patients without PD in levels of self-esteem.
Fornells-Ambrojo & Garety [36]	20 patients with PD 21 patients with depression 32 healthy controls	RSE	×	---	---	Patients with early psychosis; Patients were classified as poor-me paranoia. ***DC:*** Patients with PD had higher self-esteem than patients with depression (*d* = 1.86).
Kesting et al. [29]	28 patients with acute PD 31 patients remitted PD	RSE	✓ (*d* = 1.50)			***AD:*** No differences between patients with acute and remitted PD in explicit or implicit self-esteem;
	21 patients with depression 59 healthy controls	IAT z-transformation		×	 ×	***DC:*** No difference between patients with PD and patients with depression in explicit self-esteem.
Lyon et al. [35]	14 patients with PD 14 patients with depression 14 healthy controls	RSE	×	---	---	Patients with PD did not differ from healthy controls. ***DC:*** Patients with PD had higher self-esteem than patients with depression (*d* = 1.59).
MacKinnon et al. [31]	16 patients with PD 20 healthy controls	RSE	✓ (*d* = 1.31)			Group differences in explicit self-esteem (but not in implicit self-esteem) diminished, after controlling for depression, anxiety and stress.
		IAT descriptive level		×	 ×	
McCulloch et al. [37]	13 patients with PD 15 patients with depression 15 healthy controls	RSE	×	---	---	Patients with PD were diagnosed with late-onset psychosis did not differ from healthy controls, ***DC:*** Patients had higher explicit self-esteem than patients with depression (*d* = 1.54).
McKay et al. [30]	10 patients with PD 10 patients with remitted PD 19 healthy controls	RSE ASRRT	✓[a] ✓[a]			Patients with PD had lower explicit self-esteem than the other two groups combined. Group effect in explicit self-esteem (but not in implicit self-esteem) became nonsignificant after control for depression; IAT-effect for all words included in the IAT and for self-related words only.
		IAT descriptive level		✓	 (✓)	
Merrin et al. [32]	24 patients with PD 24 patients with depression	RSE	✓ (*d* = 2.19)	---	---	***DC:*** No differences in self-esteem between patients with PD and patients with depression.

Table 2(continued)

	24 healthy controls					
Moritz et al. [33]	13 patients with PD 10 patients without PD 14 patients with depression 41 Non-clinical controls	RSE IAT Descriptive level	✓ (*d* = 1.15)	 ✓	 (✓)	***AD:*** Patients with PD had higher explicit self-esteem than patients without PD. ***DC:*** No differences between patients with PD and patients with depression in explicit self-esteem; Patients with acute and remitted PD had lower implicit self-esteem than healthy controls. Patients with PD showed lower implicit self-esteem than patients with depression.
Thewissen et al. [22]	30 patients with PD 34 patients with other positive symptoms 15 patients with remitted psychotic symptoms 67 healthy individuals (of whom 38 had high paranoia scores)	SERS (sum scores)	✓ (*d* = 1.24)	---	---	The SERS is generally used to assess positive and negative self-evaluations. The sum score reflects general self-esteem. Participants were divided into high/ medium/ low paranoid groups. The high paranoid participants had lower self-esteem than the low paranoid participants.
Valiente et al. [38]	35 with acute patients with PD 35 patients with depression 44 healthy controls	composite score of self-worth and self-acceptance[1] GNAT	×	 ✓	---	No differences between patients with PD and healthy controls in levels of explicit self-esteem. ***DC:*** Patients with depression had lower explicit self-esteem than patients with PD (*d* = .98). Patients with depression did not differ from patients with PD and healthy controls in implicit self-esteem.
Vázquez et al. [34]	40 patients with PD 25 patients with remitted PD 35 patients with depression 36 healthy controls	RSE z-transformation	✓ (*d* = .93)		×	***AD:*** Healthy controls had higher explicit self-esteem than the other groups. ***DC:*** Patients with acute PD higher self-esteem than patients with depression (*d* = 1.30).
Correlational analyses of self-esteem and PD within samples of patients with schizophrenia						
Ben-Zeev et al. [41]	194 patients with schizophrenia or schizoaffective	SERS-SF	✓ (*r* = .50)	---	---	Low self-esteem correlated with PD.
Drake et al. 42	257 patients with first episode psychosis	RSE	(✓) (*r* = .25)	---	---	Self-esteem was assessed at baseline, 6 weeks, 3 month and 18 month follow-up. Low self-esteem was significantly associated with persecutory delusions at 6 weeks (*r* = - .25) and 18 month follow-up (*r* = - .25).
Humphreys et al. [45]	15 patients with PD 20 patients without PD	RSE	✓ (*r* = .42)			Patients with recent onset psychosis; Low explicit self-esteem significantly correlated with paranoia; this association became nonsignificant when controlled for mood or severity of non-paranoid psychotic symptoms.
Jones et al. [44]	87 patients with schizophrenia	RSE	✓ (*r* = .22)			Low self-esteem correlated with PD.
Romm et al.	113 patients with early psychosis	RSE	✓	---	---	Low self-esteem correlated with PD. Low self-esteem ---

Table 2(continued)

[43]			(*r* = .30)			significantly predicted PD even after adjustment for premorbid functioning and depression.
Smith et al. [39]	100 patients with nonaffective psychosis	RSE	✓ (*r* = .36)	---	---	Low self-esteem correlated with PD. Patients with lower self-esteem were more preoccupied and distressed by their delusions.
Warman & Lysaker [40]	30 patients with schizophrenia or schizoaffective disorder (73% with active delusions)	MSEI	✓ (*r* = .29)	---	---	Correlation between low self-esteem and PANSS suspiciousness item; Self-esteem was correlated with delusional themes of persecution but not with suspiciousness or paranoid ideation. R = - .29 is the mean r of these three variables.
Comparison to of patients with PD to standard norms						
Chadwick et al. [49]	53 patients with current PD	RSE	×	---	---	According to norms of Rosenberg [2], levels of self-esteem in this sample can be classified as normal to high.
Freeman, et al. [47]	25 patients with current PD	RSE	✓	---	---	Self-esteem was classified as low by the authors.
Freeman et al. [46]	28 patients with PD 25 patients without PD	Self-Concept Questionnaire	✓	---	---	Self-esteem in the patient sample was low compared to community norms. ***AD:*** No differences in self-esteem between patients with and patients without PD.
Green et al. 48	70 patients with PD	RSE	✓	---	---	Self-esteem was classified as low by the authors.
Comparison of subsamples only						
Bowins & Shugar [51]	28 patients with PD 10 patients with other delusions	CSEI	×	---	---	***AD:*** No significant differences between patients with and patients without PD.
Candido & Romney [50]	15 patients with PD 15 patients with PD and depression 15 patients with depression	CSEI	×	---	---	***DC:*** Patients with PD had higher self-esteem than patients with depression (*d* = 3.50), the patients with PD and depression were in between.
2.2 Global Self-Esteem in Persecutory Delusion Proneness						
Cicero & Kerns [52]	186 undergraduate college students	RSE	✓ (*r* = .45)			Low explicit self-esteem significantly correlated with paranoia. Implicit self-esteem was uncorrelated to paranoia.
		IAT		×	×	The interaction of implicit and explicit self-esteem did not significantly predict paranoia, which the authors interpret as the absence of a discrepancy between implicit and explicit self-esteem.
Combs et al. [55]	723 undergraduates (114 with high paranoia, 609 with low paranoia)	RSE	(✓) (*r* = .13)	---	---	Low self-esteem was correlated with paranoia. When the sample was divided into high and low subclinical paranoid individuals, the groups did not differ from each other in self-esteem.
Combs et al.	60 undergraduates (29 with high	RSE	✓	---	---	Individuals with high paranoia scores had lower self-esteem

Table 2(continued)

[54]	paranoia, 31 with low paranoia)		(d = 1.13)			than individuals with low paranoia scores.
Fowler et al. [15]	752 students	RSE	(✓) (r = .40)	---	---	Low self-esteem was correlated with persecutory delusions, but correlations became non-significant when controlled for other variables.
Ellet et al. [56]	324 college students	RSE	✓ (r = .18)	---	---	Low self-esteem significantly correlated with paranoia.
Martin et al. [57]	193 undergraduates	RSE	✓ (r = .42)	---	---	Low self-esteem significantly correlated with paranoia.
Palmier-Claus et al. [53]	70 healthy individuals	Momentary self-esteem [2]	✓ (β = .44)			An experimental study: in the stress condition, low momentary self-esteem was associated with higher levels of momentary paranoia.
Raes and Van Gucht [59]	131 students	RSE	✓ (β = .21)	---	---	Self-esteem was a negative predictor of paranoia, even after controlling for depression (β = - .21).
Thewissen et al. [60]	4636 participants from the general population (51 persons with paranoid symptoms, 113 persons with other positive symptoms)	RSE	✓ (d = .88)	---	---	Individuals with paranoid symptoms had lower self-esteem than individuals with other positive symptoms and individuals with no positive symptoms.
Warman et al. [58]	121 students	RSE	✓ (r = .26)	---	---	Low self-esteem correlated with conspicuousness and paranoid ideation but not with persecution (as measured using the PDI); mean r of these three variables.) = - .26.

Note. ✓= hypothesis confirmed; (✓) = hypothesis confirmed in part; ×= hypothesis not confirmed; --- = not assessed; [1] mean of Self-Worth subscale of the World Assumption Scale and of the Self-Acceptance subscale of the Scales of psychological Well-Being; [2]six items ("I like myself."), partially adapted from the study by Thewissen et al. (2008); [a] no calculation of effect size possible due to unreported values; *AD:* Acuteness of delusion; *DC:* depressed controls;
ASRRT: Adjective Self Relevance Rating Task [30]; CSEI: Coopersmith Self-Esteem Inventory [113]; EST: Emotional Stroop Task [83]; GNAT: go/ no go association Task [62]; IAT: Implicit Association Task [119]; MSEI: Multidimensional Self-Esteem Inventory [115]; PANSS: Positive and Negative Syndrome Scale [129]; PDI: Peters et al. Delusions Inventory [130]; PPQ: Personal Profile Questionnaire [11]; RSE: Rosenberg Self-Esteem Scale [2]; Self-Concept Questionnaire [116]; SERS: Self-Esteem Rating Scale [122]; SERS-SF: Self-Esteem Rating Scale, Short Form [123].

Table 3: Positive and Negative Self-Evaluations in Persecutory Delusions (PD)

Study	Participants	Measure(s)	Self-evaluations		Comments
			Impaired positive self-evaluations in PD	**Enhanced negative self-evaluations in PD**	
3.1 Positive and Negative Self-Evaluations in Patients with PD in comparison to healthy controls					
Group comparisons: Self-evaluations in patients with PD compared to healthy controls					
Bentall et al. [63]	39 patients with PD 29 patients with remitted PD 20 patients with depression, experiencing PD 20 patients with depression 33 healthy controls	SERS	×	✓ (d = 1.31)	***AD:*** No differences in positive or negative self-evaluations between patients with PD and patients with remitted PD. ***DC:*** Patients with PD reported more positive self-evaluations than patients with depression and psychotically depressed patients. Patients with PD did not differ in negative self-evaluations from patients with depression but reported less negative self-evaluations than psychotically depressed patients.
Kinderman et al. [11]	16 patients with PD, BDI: 17,1 16 patients with depression 16 healthy controls	PPQ EST (implicit)	× ✓	✓ (d = 1.19) ✓	***DC:*** Patients with PD showed more explicit positive self-evaluations compared to patients with depression; No differences between patients with PD and patients with depression in explicit negative, implicit positive and negative self-beliefs.
MacKinnon et al. [31]	16 patients with PD 20 healthy controls	BCSS	×	✓ (d = 1.51)	Group differences in negative self-evaluations diminished when controlled for depression, anxiety and stress.
Vázquez et al. [34]	40 patients with PD 25 patients with remitted PD 35 patients with depression 36 healthy controls	SRIRT endorsement SRIRT recall (implicit)	× ✓	✓ (d = .84) ×	***AD:*** Acute deluded and remitted patients did not differ in explicit or implicit self-evaluations. ***DC:*** Patients with PD had more positive and less negative self-evaluations than patients with depression in explicit measures, no group differences in implicit measures.
Correlational analyses of self-evaluations and PD within samples that include patients with schizophrenia					
Bentall et al. [65]	88 patients PD 56 patients with depression 20 patients with depressed and paranoid symptoms 64 healthy controls	SERS	✓	✓ [a]	Structural equation modelling: positive and negative self-evaluations (and several other cognitive features) are associated with paranoia.

Table 3(continued)

Fowler, et al. [71]	301 patients with nonaffective psychosis	BCSS and negative cognition scale of the BDI	---	✓ (β = .24)	Negative cognition, mood and paranoia were assessed at baseline, after 3 month and after 12 month. Negative cognition at baseline was associated with paranoia at baseline (β = .12) and predicted paranoia at 3 month and 12 month follow up (both β = .14); Negative cognition at 3 month follow up predicted paranoia at 12 month follow up.
Palmier-Claus et al. [64]	256 patients with first-episode psychosis	RSE (pos. & neg.subscale)	×	✓ (β = .36)	Negative self-evaluations (but not positive self-evaluations) predicted paranoia.
Smith et al. [39]	100 patients with psychosis	BCSS	---	✓ (r = .36)	Negative self-evaluations were associated with PD
Comparison of subsamples only					
Humphreys et al. [45]	15 patients with PD 20 patients without PD	SESS	×	✓	Patients with recent onset psychosis ***AD*** [b]***:*** Patients with PD had more negative self-evaluations that patients without PD; no group differences in positive self-evaluations
3.2 Positive and Negative Self-Evaluations in PD Proneness					
Addington & Tran, [66]	38 clinical high risk individuals (in the prodromal phase, but without a psychotic disorder)	BCSS	×	✓ (r = .39)	Negative self-evaluations were associated with suspiciousness as measured using the Scale of Prodromal Symptoms (SOPS; [131])
Fowler et al. [15]	752 students	BCSS	×	✓ (r = .50)	Negative self-evaluations (but not positive self-evaluations or global self-esteem) predicted paranoia (sr^2 = .09).
Freeman et al. [68]	200 adults from the general population	BCSS	×	✓ (OR = 1.14)	Virtual reality study: momentary paranoia as assessed after having been exposed to a neutral virtual train ride was predicted by negative self-evaluations (but not by positive self-evaluations).
Gracie et al. [70]	228 students	BCSS	(✓)	✓ (r = .54)	Enhanced negative-self-evaluations and impaired positive self-evaluations are correlated with paranoia. Negative self-evaluations (sr^2 = .05) (together with other variables), but not positive self-evaluations predicted paranoia.
Green et al. [67]	58 individuals from the general population with a range from low to high levels of paranoia	BCSS	×	×	An experimental study: individuals who report paranoid explanations for the cause of ambiguous events showed a lack of positive self-evaluations at trend level (p = .07) compared to individuals who report rather non-paranoid explanations. The two groups did not differ in negative self-evaluations.
Pickering et al. [69]	503 students	SERS	✓	✓ (r = .64)	Subclinical paranoia was correlated with elevated positive self-evaluations and low negative self-evaluations.
Udachinda et al. [21]	42 students	SERS	✓	✓ (r = .56)	Subclinical paranoia was correlated with low negative self-esteem and higher positive self-esteem.

Table 3(continued)

Note. ✓= hypothesis confirmed; (✓) = hypothesis confirmed in part; ×= hypothesis not confirmed; --- = not assessed; [a] no calculation of effect size possible due to unreported values; *AD:* Acuteness of delusion; *DC:* depressed controls; [b] The study also found negative (but not positive) self-evaluations to be correlated in total sample. In order to not report results twice, these results were not reported in the section for correlational studies.
BCSS: Brief Core Schema Scale [15]; EST: Emotional Stroop Task [83]; PPQ: Personal Profile Questionnaire [11]; RSE: Rosenberg Self-Esteem Scale [2]; SERS: Self-Esteem Rating Scale [122]; SESS-sv: Self Evaluation and Social Support Interview: Schizophrenia Version [124]; SRIRT: Self Referent Incidental Recall Task [120, 121]

Table 4: Instability of Self-esteem in Paranoia

Study	Participants	Measures of instability of self-esteem	Instability of self-esteem associated with higher paranoia	Comments
Jones et al. [44]	66 people with schizophrenia	Changes in RSE from baseline to 18-month follow-up	✓	A decrease in self-esteem was associated with an increase in ideas of persecution (from baseline to follow up)
Palmier-Claus et al. [64]	256 patients with first-episode psychosis	SD of the positive and negative scores of the RSE that the patients completed at baseline, 6 weeks, 3 months and 18 months afterwards	(✓)	Fluctuations in positive (but not in negative) self-esteem predicted paranoia.
Palmier-Claus et al. [53]	70 healthy individuals	Momentary self-esteem was assessed before and after each of the three stress conditions using six items (e.g. "I am a valuable person"); variability of self-esteem was defined as the standard deviation of the four time points.	✓	An experimental study: in the stress condition, greater variability in self-esteem was associated with higher levels of paranoia.
Raes et al. [59]	131 students	SEIS: 4-item-questionnaire assessing instability of self-esteem (e.g. "The extend to which I appreciated myself is liable to fluctuation.")	✓	
Thewissen et al. [77]	33 patients with current PD 34 patients without current PD 15 patients with remitted psychotic symptoms 76 healthy individuals (of whom 39 had high paranoia scores)	ESM: a structured diary technique that recommended the participant 10 times on 6 consecutive days to rate self-esteem using 4 items (e.g. "I like myself") and paranoid thoughts.	(✓)	Sample partly overlaps with the study by Thewissen et al. [8] We report only the results over and above the fluctuations in self-esteem.
Thewissen et al. [22]	30 patients with current PD 34 patients without current PD 15 patients with remitted psychotic symptoms 75 healthy individuals (of whom 38 had high paranoia scores)	ESM: a structured diary technique that recommended the participant 10 times on 6 consecutive days to rate self-esteem using 4 items (e.g. "I like myself") and paranoid thoughts.	✓	
Thewissen et al. [60]	4636 participants from the general population (51 persons with paranoid symptoms, 113 persons with other positive symptoms)	SD of RSE total score that the patients completed at baseline, 1 year and 2 years afterwards	✓	

Note. ✓= hypothesis confirmed; (✓) = hypothesis confirmed in part.
ESM: Experience sampling method [76]; RSE: Rosenberg Self-Esteem Scale [2]; SEIS: Self-Esteem Instability Scale [59]; SD: standard deviation

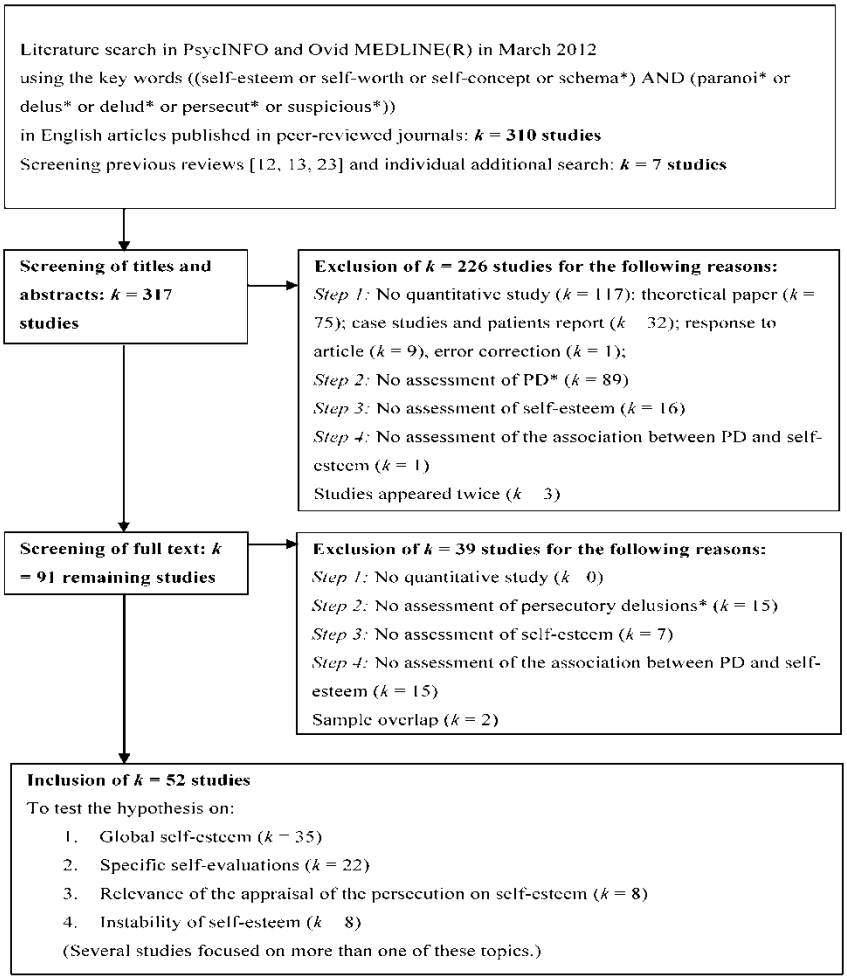

Figure 1: Process of literature search for studies investigating self-esteem in persecutory delusion (PD)

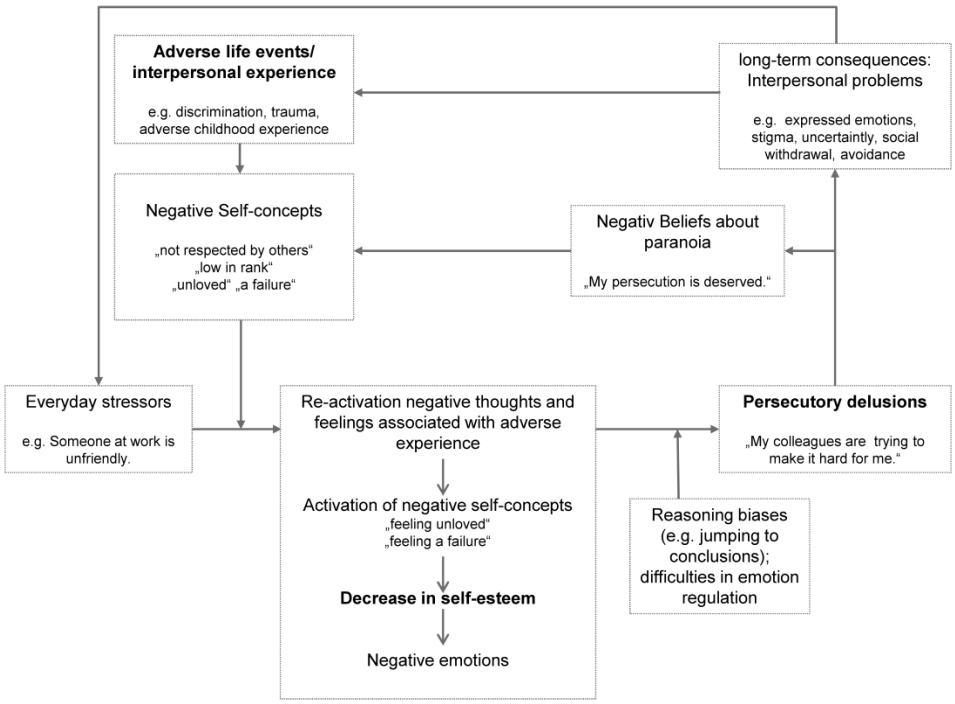

Figure 2: The role of self-concepts in the formation and maintenance of persecutory delusions

Anhang D: Lebenslauf und Publikationen

Die Seiten 121-125 (Lebenslauf) enthalten persönliche Daten. Sie sind deshalb nicht Bestandteil der Online-Veröffentlichung.

Anhang E: Eidesstattliche Erklärung

Ich versichere, dass ich meine Dissertation

„Die Bedeutung des Selbstwertgefühls für die Entstehung und Aufrechterhaltung von Verfolgungswahn“

selbstständig, ohne unerlaubte Hilfe angefertigt und mich dabei keiner anderen als der von mir ausdrücklich gekennzeichneten Quellen und Hilfen bedient habe.

Die Dissertation wurde in der jetzigen oder einer ähnlichen Form noch bei keiner anderen Hochschule eingereicht und hat noch keinen sonstigen Prüfungszwecken gedient.

Marburg, im Februar 2013

Marie-Luise Kesting